



# Existing Facility Conditions Report

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in support of the  
U.S. 40 Corridor Study

MP 21 in Wasatch County to MP 147 in  
Uintah County, Utah

Utah Department of Transportation



Project No. S-0040(65) 21  
PIN 5855

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## 1.0 Introduction

This report provides a compilation of data for reference during development of the U.S. 40 Corridor Study. It provides the basis by which planning analyses will be completed and provides the framework for an understanding of current conditions along the corridor. This report also describes the role of the U.S. 40 corridor and the need for a long-term corridor plan.

The long-term plan will allow the Utah Department of Transportation (UDOT) to plan for corridor improvements in a manner that involves local stakeholders, residents of the area, business and industry interests, and agencies. The plan will identify strategies, action items, and priorities for transportation facility management and improvement of U.S. 40.

### 1.1 Corridor Study Area

The U.S. 40 Corridor Study area extends from MP 21 in Wasatch County, just east of the southeastern Heber City limit, to MP 157, near Jensen at State Route (SR) 149 (Figure 1-1). The 136-mile long corridor crosses three counties in Utah—Wasatch, Uintah<sup>1</sup>, and Duchesne—and passes through a number of small rural towns and cities. These cities are important economic centers for residents living and working in the Uintah Basin. They also provide vital support of tourism, another important element of life in the Uintah Basin. The safe and efficient operation of U.S. 40 is of interest to residents of these cities and less developed outlying areas of the three counties.

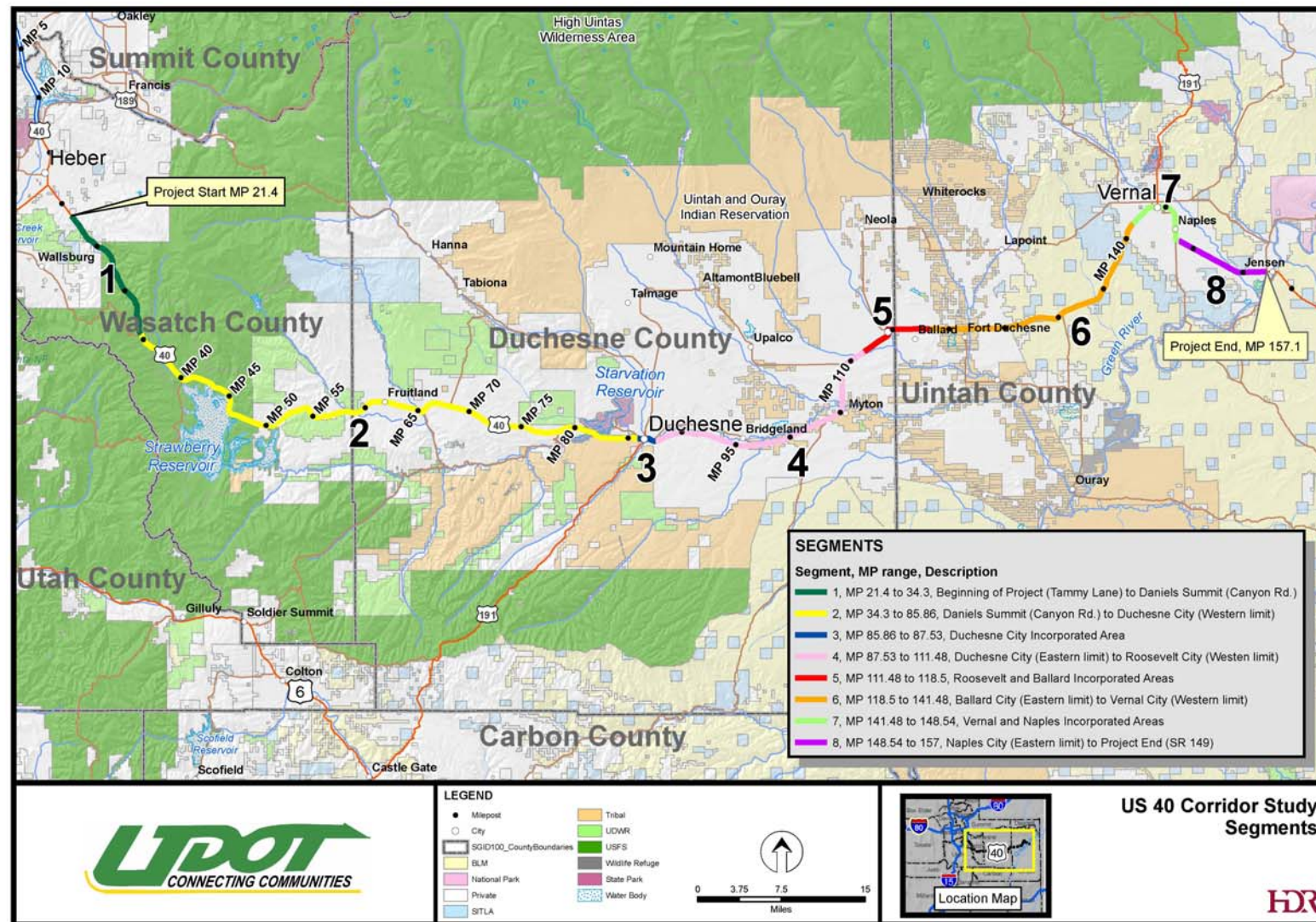
For the purposes of the U.S. 40 Corridor Study, the project area is divided into eight segments based on general land use types. These segments are as follows:

***Segment 1: Project Start (MP 21) to Daniels Summit (MP 34).*** This 13-mile-long segment travels through mostly undeveloped land in Wasatch County. Most land along the roadway is managed by the U.S. Forest Service (USFS).

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<sup>1</sup> The word Uintah is spelled two different ways, depending upon the reference. Most spellings use *Uintah*, though Wasatch County and the U.S. Forest Service use the spelling *Uinta*, and the river by that name is the *Uinta* River.

Figure 1-1. Project Segments





***Segment 2: Daniels Summit (MP 34) to the Western Duchesne City Limit (MP 86).*** This segment, which is 52 miles long, travels through mostly undeveloped land in Wasatch and Duchesne Counties. Most land between Daniels Summit and Strawberry Reservoir is managed by the U.S. Forest Service (USFS), though there is limited private recreational development around the reservoir. Between the eastern side of the reservoir and western Duchesne County, the corridor passes through state-owned land (wildlife management areas) and private land. Most of the land between the Wasatch/Duchesne county line and the city of Duchesne is privately owned, with the exception of land around Starvation Reservoir, which is managed as a State Park.

***Segment 3: Incorporated Area of Duchesne City (MP 86 to MP 88).*** This two-mile-long segment in Duchesne County is comprised of that portion of the corridor within the Duchesne City limits. Development is typical of that found in rural towns. Land along the highway is dedicated primarily to commercial uses, though there is some residential and industrial development.

***Segment 4: Eastern Limit of Duchesne (MP 88) to the Western Limit of Roosevelt (MP 112).*** This 24-mile-long segment covers an area dominated by private and tribal land. This area supports some agricultural production and limited oil and gas development. The segment is entirely within Duchesne County.

***Segment 5: Roosevelt and Ballard Incorporated Areas (MP 112 to MP 119).*** This segment, which is seven miles long, encompasses the area within the incorporated limits of the cities of Roosevelt and Ballard. The Duchesne/Uintah County Line marks the political division between Roosevelt and Ballard, but the area functions as a single, more urbanized area. Development along U.S. 40 is dominated by commercial uses, though there is some residential development interspersed along the segment.

***Segment 6: Eastern Limit of Ballard (MP 119) to the Western Limit of Vernal (MP 142).*** This 23-mile-long segment is characterized by tribal land and private land in the western half and Bureau of Land Management (BLM) and state-owned land in the eastern half. There is some oil and gas-related development along the highway, though most wells are south of U.S. 40 on tribal and BLM land. This segment is entirely within Uintah County.

***Segment 7: Vernal and Naples Incorporated Areas (MP 142 to MP 149).*** This seven-mile-long segment is dominated by urban development normally associated with rural cities. Development immediately adjacent to the highway is

characterized by commercial and industrial development, with limited residential development interspersed throughout.

***Segment 8: Eastern Limit of Naples (MP 149) to Project End (MP 157).*** This segment, which is eight miles long, is mostly under private ownership and is characterized by rural residential and agricultural development. State-owned land that touches the highway just west of Jensen supports a limited number of oil and gas wells.

## 1.2 Contents of this Document

This document is comprised of five main sections:

- Existing Transportation System: a description of existing facility conditions for which information is available.
- Existing Operational Conditions: a summary of existing traffic volumes, level of service, accident data, and bicycle and pedestrian facilities.
- Existing Land Use Conditions and Demographics: a summary of land uses along the corridor and of population and housing conditions that may influence land use and future development.
- Literature Review: a review of how existing federal, state, and local plans address the U.S. 40 corridor.
- Issue Summary: a summary of issues identified by land owners and managers, regulators, and the general public.

A complete list of references is included in Section 6.0 of this report.



## 2.0 Existing Transportation System

The following summarizes the existing facility conditions of the U.S. 40 project corridor. In some cases, the information below focuses on the project segments described in Section 1.1. Information is also presented by milepost (MP).

### 2.1 Highway Geometrics

#### 2.1.1 Terrain

*Terrain type* is a factor that greatly affects roadway conditions and ultimately how roadways operate. Roadway terrain is typically described as *level*, *rolling*, or *mountainous*. On level terrain, all types of vehicles can generally maintain the same speeds. On rolling terrain, the speeds of heavy vehicles (such as heavy trucks) can be substantially slower than those of passenger vehicles but are not so slow that heavy vehicles have to operate at “crawl” speed for long periods of time. Finally, mountainous terrain causes heavy vehicles to operate at crawl speeds for significant distances or frequent intervals (TRB 2000).

Specific information on highway grades along U.S. 40 is not readily available. In general, the highway traverses mountainous terrain with steep grades on the west end of the corridor through Daniels Canyon and more level and rolling terrain in the Uintah Basin. Truck climbing lanes occur around MP 43, MP 106 to MP 107, and MP 152 to MP 153. Passing lanes, which may also serve as climbing lanes in some areas, are summarized under Section 2.1.3, Passing Opportunities, below.

Once projects are defined, specific information regarding grades can be gathered as part of each project.

#### 2.1.2 Horizontal and Vertical Alignment

Roadway alignment is simply the path that a roadway’s centerline follows. Alignment is thought of in horizontal and vertical planes. Factors that affect how an engineer thinks about alignment include:

- Horizontal Curves
  - Design speed
  - Length of curve

- Roadway cross section
- Radius of curve
- Superelevation (or banking)
- Tangent-to-curve transition
- Lines of sight
- Profile
- Drainage
- Cost
- Compatibility with existing and proposed conditions (controls) along the path
- Vehicle characteristics
- Driver limitations
- Vertical Curves
  - Design speed
  - Vertical clearances
  - Sight distance
  - Topographical/terrain variations
  - Drainage considerations
  - Cost
  - Entrance considerations associated with acceleration and deceleration
  - Lengths of grades
  - Compatibility with grades and elevations existing on adjacent land and approaching roads and drives adjacent to the alignment

Horizontal alignment, combined with vertical alignment, serves as the primary controlling element associated with the design of all types of public streets and highways. Alignment affects roadway capacity, safety, and function.

A compilation of information on the existing horizontal and vertical alignment of U.S. 40 is not readily available. Historic as-built plans for the highway provide limited information about alignment, but the stationing (i.e., reference points) is different from the current milepost system. This makes a direct comparison



between historic information and current conditions difficult and very time consuming. Existing alignment issues have been identified by people who use the highway on a regular basis, but UDOT maintenance station personnel, and by the road departments of local government agencies (see Section 5.0 of this document for a summary of issues identified to date). Once projects are identified, project-level analyses will provide detailed information about how the current horizontal and vertical alignments affect operation and how they might be changed to improve roadway conditions.

### 2.1.3 Passing Opportunities

Provision of passing sight distance on two-lane highways is another factor that affects roadway capacity. In order to permit passing on a two-lane highway, drivers must be able to see a sufficient distance to see oncoming vehicles and to execute a safe passing maneuver. The minimum recommended passing sight distance is directly related to the design speed of any given section of roadway. The American Association of State Highway and Transportation Officials (AASHTO) manual recommends a minimum of 2,285 feet for passing sight distance at a 65 miles per hour (mph) design speed (AASHTO 2004). According to the Roadway Design Manual of Instruction provided by UDOT (2006a), the required AASHTO passing sight distance may be shortened by using engineering judgment in locations where the lack of passing zones directly affects the roadway level of service (LOS). Table 2.1-1 below shows the percentage of the U.S. 40 corridor where some passing movement is allowed. This includes passing maneuvers into opposing travel lanes and current passing lanes that exist in either direction of travel.

Table 2.1–1. Percentage of the Corridor Where Passing is Allowed

Segment	% of Passing Allowed
1	92.9%
2	83.2%
3	82.6%
4	75.9%
5	85.5%
6	79.1%
7	81.9%
8	90.4%

Source: UDOT 2006b

U.S. 40 currently provides passing opportunities in the locations listed in Table 2.1-2

Table 2.1–2. Existing Passing Lanes on U.S. 40

Beginning MP	Length (Miles)	Direction <sup>a</sup>	Notes
23.34	7.09	EB	4% grade
31.29	3.23	EB	4% grade
35.11	0.53	WB	4% grade
42.97	0.34	EB	4% grade
45.88	1.96	EB	4% grade
48.83	0.36	EB	4% grade
50.62	0.41	EB	5% grade
58.34	11.19	WB	4 % to 5% grade
59.08	0.35	EB	5% grade
60.06	0.32	WB	No grade
61.60	0.16	WB	No grade
69.31	0.88	EB	3% grade
70.33	0.36	WB	No grade
80.76	6.81	WB	3% grade
85.88	0.92	EB	Inside Duchesne city limits (2 lanes)
86.80	3.47	WB	0.92 miles inside Duchesne (2 lanes) ; no grade
106.04	1.51	EB	0% grade
109.50	0.84	WB	4.5% grade
111.33	4.00	EB	Inside Roosevelt
115.41	4.08	WB	Inside Roosevelt (2 lanes)
118.79	0.90	EB	No grade
120.16	0.77	WB	3% grade
138.55	1.27	EB	4% grade
141.24	7.18	EB	Inside Vernal/Naples (2 lanes)
148.41	7.56	WB	Inside Vernal/Naples (2 lanes)

<sup>a</sup> EB = eastbound, WB = westbound

Source: UDOT 2006b



### 2.1.4 Right-of-Way Width

Right-of-way widths can vary significantly throughout the corridor, especially within the different city limits. UDOT does not have recommended right-of-way widths for rural highways such as U.S. 40. Table 2.1-3 shows the average right-of-way by segment.

Table 2.1–3. Average Right-of-Way Width by Segment

Segment	Average Right-of-Way Width (feet) <sup>a</sup>
1	133
2	232
3	168
4	137
5	97
6	256
7	113
8	108

<sup>a</sup> Width calculated using weighted average of sections of roadway for which specific ROW widths are available, by segment.

Source: UDOT 2004a

### 2.1.5 Lane and Shoulder Width

The entire U.S. 40 corridor has 12-foot travel lanes, which is the recommended width by AASHTO for rural highways. The U.S. 40 corridor also contains several areas of medians, right-hand turn lanes, and acceleration lanes. These median, turn, and acceleration lanes are assumed to be a width of 12 feet. In the urban areas (Segments 3, 5, and 7), a median is typical through the city limits. Shoulder widths are the narrowest (0 to 1.9 feet wide) over Daniels Summit and through the City of Vernal. Narrow sections measuring 2 to 4 feet occur near Strawberry Reservoir and Fruitland in Segment 2 and between the eastern limit of Naples to Jensen in Segment 8 (UDOT 2004b).

Shoulder width on rural highways is directly related to traffic demands. AASHTO recommends a usable shoulder width of 8 feet for design volumes over 2000 vehicles per day. Usable shoulders should be paved, but due to economic constraints, low volumes, and/or where narrow sections are needed to reduce construction impacts, the paved shoulder may be reduced to 2 feet. When barriers or guardrail must be used to protect from roadside features, AASHTO recommends a minimum of 4 feet from the traveled way to the barrier if a narrow section is needed due to construction impacts. Based on what is shown in the U.S. 40 video log, the existing shoulder widths appear to meet AASHTO standards. However, information provided on UDOT's Utah Bicycle Suitability Map (UDOT 2004b) conflicts with this information and shows that there are some areas where the shoulder does not meet AASHTO standards. Future project-level analyses will need to review shoulder widths on the ground and address any issues associated with inadequate shoulder widths.

## 2.1.6 Access Management

Access standards and management greatly affect the safety and operation of rural highways such as U.S. 40, especially where the highway intersects developed cities and towns. Table 2.1-4 outlines UDOT's proposed statewide access management standards (standards have not yet been finalized by UDOT). According to the access category inventory for UDOT Region 3, which includes the U.S. 40 corridor, most of the project corridor is classified as *System Priority Rural*. The classification changes briefly through the more urbanized areas of Duchesne, Myton, Roosevelt, and Vernal-Naples as follows:

- Duchesne (all of Segment 3) and Roosevelt (in Segment 5): Regional Rural and Community Rural
- Myton (in Segment 4): Regional Rural
- Vernal and Naples (Segment 7): five different classifications depending on location within the cities, including Regional Rural, System Priority Urban, Regional Priority Urban, Regional Urban, and Community Rural



Table 2.1–4. Proposed State Highway Access Management Standards

		Minimum Signal Spacing (feet)	Minimum Street Spacing (feet)	Minimum Access Spacing (feet)	Minimum Interchange to Cross Road Access Spacing (feet)		
					A: to 1st R- in R-out <sup>a</sup>	B: to 1st Intersection <sup>b</sup>	C: from Last R-in R-out <sup>c</sup>
Category							
1	Interstate/ Freeway	Freeway/Interstate Standards Apply					
2	System Priority Rural	5,280	1,000	1,000	1,320	1,320	1,320
3	System Priority Urban	2,640	No Unsignalized Access Permitted		1,320	1,320	1,320
4	Regional Rural	2,640	660	500	660	1,320	500
5	Regional - Priority Urban	2,640	660	350	660	1,320	500
6	Regional Urban	1,320	350	200	500	1,320	500
7	Community Rural	1,320	300	150	NA	NA	NA
8	Community Urban	1,320	300	150	NA	NA	NA
9	Other	1,320	300	150	NA	NA	NA

<sup>a</sup> Standard "A" distance from the interchange off-ramp gore area to the first right-in/out driveway intersection.

<sup>b</sup> Standard "B" refers to the distance from the interchange off-ramp gore area to the first major intersection.

<sup>c</sup> Standard "C" refers to the distance from the last right-in/out driveway intersection to the interchange on-ramp gore areas.

Source: UDOT 2003

## 2.2 Structural Conditions

### 2.2.1 Pavement Condition

UDOT determines pavement condition by using the skid number, IRI HCS (international roughness index half car simulation) number, and rut depth. The classifications for each of the values are directly related to corresponding range for that number. These ranges are shown in the Table 2.2-1.

Table 2.2-1. Pavement Ratings and Ranges

Rating Type	Classification
Skid Number	
SN > 45	Standard
30 > SN > 45	Marginal
SN < 30	Substandard
IRI HCS	
IRI < 45	Very Good
45 < IRI < 70	Good
70 < IRI < 100	Fair
100 < IRI < 135	Poor
IRI > 135	Very Poor
Rut Depth (inches)	
R < 0.1	Very Good
0.1 < R < 0.25	Good
0.25 < R < 0.50	Fair
0.50 < R < 0.75	Poor
R > 0.75	Very Poor

Source: UDOT 2001

By using the ranges specified in Table 2.2-1, the overall pavement condition can be determined. All of the segments along the U.S. 40 project corridor are in good or fair condition (see Table 2.2-2). This was determined by taking the average values for each segment. However, because each segment's condition was taken as an average, there might be a few miles within each that could be classified as poor. Such poor conditions are notable at MPs 115, 116, 148 and 150.



Table 2.2–2. Pavement Condition of the U.S. 40 Corridor

Segment	Average Skid Number	Average IRI HCS	Average Rut Depth (inches)	Pavement Condition
1	38.7	68.8	0.11	Good
2	39.3	63.7	0.15	Good
3	40.2	70.5	0.15	Fair
4	38.8	63.4	0.11	Good
5	34.6	95.9	0.16	Fair
6	29.1	53.3	0.11	Good
7	25.2	81.8	0.22	Fair
8	30.9	60.7	0.12	Good

Source: UDOT 2006c

### Recent Projects

Appendix A summarizes recent and planned road improvement (maintenance) projects along the project corridor. The planned maintenance projects indirectly provide additional information about existing pavement condition.

### 2.2.2 Drainage

For the majority of U.S. 40, drainage occurs as sheet flow off of the roadway into either roadside ditches or into natural drainage features. However, in some of the cities, there are closed drainage systems where the water is collected by curb and gutter. Detailed drainage sufficiency information is not readily available, but local residents and UDOT maintenance personnel have stated that drainage along some portions of the highways in the more developed areas is inadequate due to the road level surface being higher than the adjacent curb (HDR 2007a; KMP Planning 2007a, 2007b).

### 2.2.3 Bridge Conditions

In the state of Utah, bridges are assigned sufficiency ratings ranging from 0 to 100. These values are used to determine eligibility for bridge replacement and rehabilitation needs. Bridge sufficiency ratings are based on a bridge's structural adequacy, compliance with current design standards, importance for public use,

and eligibility for federal bridge replacement funds. Bridge sufficiency ratings below 50 indicate that the bridge should be replaced. Ratings between 50 and 80 imply that the bridge is in fair condition and that rehabilitation, if cost-effective, should be considered. Bridges with ratings of 80 or higher are in good or very good condition and are not eligible for federal funding through the Highway Bridge Rehabilitation and Replacement (HBRR) Program.

Appendix B lists the conditions of the 22 bridges along the project corridor. Currently, only two bridges are in poor condition (rated below 50) and four are in fair condition (rated between 50 and 80).

## 2.3 Traffic Conditions

### 2.3.1 Capacity and Level of Service

#### Methodology

#### Highway Segment Analysis

Methodologies consistent with the Transportation Research Board's (TRB) *Highway Capacity Manual 2000* (HCM) were used to assess the existing capacity and LOS conditions along the U.S. 40 project corridor. LOS is a quality measure that describes operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience (TRB 2000). TRB generally describes five levels of service as:

- A: Free flow
- B: Reasonably free flow
- C: Stable flow
- D: Approaching unstable flow
- E: Unstable flow
- F: Forced or breakdown flow

The highway segment analysis was completed using the two-lane analysis module of the Highway Capacity Software (HCS). Traffic counts conducted at various locations along the U.S. 40 corridor and served as the base traffic count information (L2 Data Collection 2007; UDOT 2007c).



A monthly variance factor derived from a UDOT permanent traffic count site near MP 111 was used to show seasonal variations in traffic (UDOT 2005a). This factor was used to adjust the base traffic count information to provide an estimate of an average traffic flow condition. Truck information was determined from UDOT's classification counts conducted along U.S. 40.

In general, speed limits in the survey area vary from 55 mph to 65 mph in the two-lane segments. At locations where passing lanes were not provided, the percent no-passing zone was a key input to determining the existing level of service (LOS; see Section 2.1.3, Passing Opportunities, for more information about passing limitations).

Currently, the HCM classifies two-lane highways as *Class I* and *Class II*. Class I highways are two-lane highways on which motorists expect to travel at relatively high speeds and are usually primary arterial roadways that connect major traffic generators or provide primary links in the state or national highway networks. Class II highways are also two-lane but function primarily as access routes to Class I highways, serve as scenic or recreational routes that are not primary arterial roadways, pass through very rugged terrain, and usually serve relatively short trips.

The highway classification establishes the measures of effectiveness that are used to determine the LOS along U.S. 40. U.S. 40, which is a two-lane highway throughout much of its length, meets the definition of a Class I highway due to its function as a primary state highway that generally supports faster-moving traffic. For Class I highways, LOS is determined using percent time spent following and average travel speed; these indicators are generally related to how the traveling public measures performance along a two lane roadway. The analysis was applied to areas outside the limits of urban locales where multiple lanes occur and included consideration of existing passing lanes along the corridor. Table 2.3-1 shows the thresholds used to determine LOS along two-lane highways.

Table 2.3–1. 2000 Highway Capacity Manual  
Roadway Segment LOS Thresholds

LOS	Percent Time Spent Following	Average Travel Speed (mph)
A	< 35	> 55
B	> 35-50	> 50-55
C	> 50-65	> 45-50
D	> 65-80	> 40-45
E	> 80	< 40

Source: TRB 2000

Table 2.3-2 summarizes the data used for the existing conditions highway segment analysis.

Table 2.3–2. Inputs for the U.S. 40 Corridor Study HCS Analysis

Segment	Begin MP	End MP	Section Length (miles)	Shoulder Width (ft)	Year Volume	2007 % Truck	% No Passing Zone
1	21.4	35.64	14.24	4	3213	21	93
2	35.64	42.97	7.33	4	3213	21	83
3	42.97	58.34	15.37	4	2956	21	83
4	58.34	72.33	13.99	4	3291	21	83
5	72.33	85.86	13.53	4	3291	21	83
6	86.81	104.57	17.76	4	4471	21	83
7	105.56	110.34	4.78	4	6049	21	76
8	115.2	116.62	1.42	4	7856	21	86
9	116.62	120.34	3.72	4	11055	21	79
10	121.9	137.55	15.65	4	8244	21	79
11	137.55	139.83	2.28	4	11919	21	79
12	149.94	157.1	7.16	4	9878	21	86

Source: UDOT 2005a, 2005b, 2006b, 2007c



## Signalized Section Analysis

The performance assessment of urban sections along U.S. 40 through Vernal and Roosevelt was analyzed to develop a baseline of existing traffic conditions. Information from traffic signal intersections were coded into Synchro, a widely used traffic signal evaluation tool.

In addition to defining LOS as being at a level of A (free flow) through F (forced or breakdown flow), the HCM defines LOS at intersections as a function of the average overall wait time for a vehicle to pass through an intersection. This way, LOS can be quantitatively measured at any intersection providing a performance measurement for the corridor. Table 2.3-3 lists the intersection LOS thresholds.

Table 2.3–3. Highway Capacity Manual  
Intersection LOS Thresholds

LOS	Intersection Delay (seconds)
A	0 to 10
B	10 to 20
C	20 to 35
D	35 to 55
E	55 to 80
F	> 80

Source: TRB 2000

Manual turning movement traffic counts were conducted at most signalized intersections along the U.S. 40 project corridor (L2 Data Collection 2007). These counts were completed during the morning and evening commute periods when traffic was at its peak. Once the peak hour condition (heaviest traffic flow) was determined, the data were entered into Synchro. In Roosevelt, counts were not conducted for the morning (AM) peak period or for one intersection (200 East) during the evening (PM) peak period (the 200 East intersection evening traffic was balanced on U.S. 40 for traffic entering from adjacent intersection then other movements were adjusted based on similar movements at adjacent intersection). To determine the AM peak traffic condition in Roosevelt, a reverse percentage flow from the PM peak period along this corridor was applied. An average percentage difference calculated from all intersections in Vernal was used to adjust for the difference in morning versus evening. Additional count

data collected for a different project in Vernal were also considered in the analysis (DMJM Harris-AECOM 2007).

## Results

### Highway Segments

The LOS for each roadway segment of U.S. 40 is based on the two-way design hourly volumes and, where presented, the impact that passing lanes have on a directional basis within a specific roadway segment. The segments presented in this analysis are different from the corridor segments identified in Section 1.1, Corridor Study Area.

In general, the existing LOS along the U.S. 40 corridor is LOS D or better, except for one segment just outside of the Vernal-Naples urban area, which is shown in Table 2.3-4 and Table 2.3-5. The calculated average travel speed ranged from 36 mph to 59 mph, with most segments in the low- to mid-50 mph range. The HCS analysis estimated the existing percent time spent following at 24% to 73%, with most segments in the 30% to 40% range. Both average travel speed and percent time spent following were negatively affected in areas where no passing lanes exist or just outside of urban areas along the corridor. UDOT recognizes the region's growing transportation needs in its current long-range plan and has identified projects to address these issues, including additional or extended passing lanes and enhanced transportation facilities (such as turn pockets) in smaller to mid-sized urban areas.



Table 2.3–4. Two Way HCS Analysis for the U.S. 40 Project Corridor, AM Peak Period

LOS Analysis Segment	Begin MP	End MP	Section Length (miles)	Volume EB/WB	LOS	Average Speed (mph)	% Time Spent Following
1	21.4	35.64	14.24	131/111	A	59.1	25.5
2	35.64	42.97	7.33	131/111	C	53.9	54.1
3	42.97	58.34	15.37	114/108	A	59.7	24.4
4	58.34	72.33	13.99	114/108	A	55.5	32
5	72.33	85.86	13.53	129/125	A	58	27.1
6	86.81	104.57	17.76	164/133	D	44.4	58.1
7	105.56	110.34	4.78	265/261	B	55.5	42.9
8	115.2	116.62	1.42	265/261	E	37.7	63.8
9	116.62	120.34	3.72	351/324	C	49.1	54.8
10	121.9	137.55	15.65	230/281	C	47	63
11	137.55	139.83	2.28	395/310	C	54.4	57
12	149.94	157.1	7.16	369/324	D	51.3	69.8

Table 2.3–5. Two Way HCS Analysis for the U.S. 40 Project Corridor, PM Peak Period

LOS Analysis Segment	Begin MP	End MP	Section Length (miles)	Volume EB/WB	LOS	Average Speed (mph)	% Time Spent Following
1	21.4	35.64	14.24	123/129	A	57.8	26.9
2	35.64	42.97	7.33	123/129	C	53.8	55.4
3	42.97	58.34	15.37	113/112	A	59.9	24.5
4	58.34	72.33	13.99	113/112	A	55.9	30.4
5	72.33	85.86	13.53	122/130	A	58.1	26.3
6	86.81	104.57	17.76	169/190	D	44	56.6
7	105.56	110.34	4.78	348/327	C	54.9	50.2
8	115.2	116.62	1.42	348/327	E	36.5	69
9	116.62	120.34	3.72	483/446	C	47.7	63.8
10	121.9	137.55	15.65	282/344	D	47	66.9
11	137.55	139.83	2.28	560/448	D	52.2	68.2
12	149.94	157.1	7.16	354/448	D	51.2	73.3

## Signalized Sections

Table 2.3-6, Table 2.3-7, Table 2.3-8, and Table 2.3-9 summarize the existing LOS in the Roosevelt-Ballard and Vernal-Naples urban areas. These tables show that all intersections in Roosevelt are operating at LOS C or better. Intersections located in Vernal have peak periods of LOS D through F. The PM peak periods generally experience greater delays due to the higher traffic volumes.

**Table 2.3–6. U.S. 40 Roosevelt Traffic Signal System, AM Peak Period**

Intersection	U.S. 40		Cross Street		Overall Intersection Delay (seconds)	Overall Intersection LOS
	EB	WB	NB	SB		
State Street	1.9	0.4	29.5	29.6	4.2	A
LOS	A	A	C	C		
Lagoon Street	7.8	7.7	17.1	13.3	13.1	B
LOS	A	A	B	B		
200 East Street	26	21.1	8.7	15.8	17.4	B
LOS	C	C	A	B		
N 600 East	2.2	2.9	26.9	26.9	6.3	A
LOS	A	A	C	C		

**Table 2.3–7. U.S. 40 Roosevelt Traffic Signal System, PM Peak Period**

Intersection	U.S. 40		Cross Street		Overall Intersection Delay (seconds)	Overall Intersection LOS
	EB	WB	NB	SB		
State Street	2.5	2.3	30.4	30.7	5.7	A
LOS	A	A	C	C		
Lagoon Street	9.5	9.5	18	18.3	15.7	B
LOS	A	A	B	B		
200 East Street	33.1	29.8	24.8	26.9	28.5	C
LOS	C	C	C	C		
N 600 East	3.4	3.5	28.7	28.8	7.4	A
LOS	A	A	C	C		



Table 2.3–8. U.S. 40 Vernal Traffic Signal System, AM Peak Period

Intersection	U.S. 40		Cross Street		Overall Intersection Delay (seconds)	Overall Intersection LOS
	EB	WB	NB	SB		
100 South	19.3	18.5	56.5	24.3	27.2	C
LOS	B	B	E	C		
500 West	5.2	2.6	26.7	30.3	7.6	A
LOS	A	A	C	C		
100 West	1.1	1.5	34.9	34.7	3.6	A
LOS	A	A	C	C		
Route 191	3.5	5.4	24.1	27.1	10.2	B
LOS	A	A	C	C		
500 East	2.7	3	33.1	33.5	8.0	A
LOS	A	A	C	C		

Table 2.3–9. U.S. 40 Vernal Traffic Signal System, PM Peak Period

Intersection	U.S. 40		Cross Street		Overall Intersection Delay (seconds)	Overall Intersection LOS
	EB	WB	NB	SB		
100 South	34	50.6	86.7	22.9	46.2	D
LOS	C	D	E	D		
500 West	14.5	38.5	63	35.4	33.6	C
LOS	B	D	E	D		
100 West	1.2	2.8	44.2	41	5.7	A
LOS	A	A	D	D		
Route 191	164.8	7.6	112.8	32.5	74.1	E
LOS	F	A	F	C		
500 East	5.9	11.3	36.3	46.2	15.5	B
LOS	A	B	D	D		

### 2.3.2 Accident History

One of the most fundamental ways that transportation investments can enhance quality of life is by making it possible for people to move around in relative safety. While it will never be possible to remove all risk involved in moving people or goods, it is an important public policy objective to identify particularly high-risk circumstances and address them as comprehensively as possible.

Improving highway safety requires consideration of the three elements influencing traffic operations: the driver, the vehicle, and the roadway. Although traffic engineers have effective control over only one of these elements—the roadway—from the planning perspective, policies could be implemented to address better information outreach and behavior. Traffic safety can be approached in a number of different ways: reducing crash occurrences, reducing the severity of crash, improving crash survivability, enforcing safety control efforts and improving design aspects of the road. Both physical alterations and social policies should be considered to enhance safety in the corridor.

HDR completed a complete analysis of existing crash data for the U.S. 40 corridor study project area (HDR 2007a). That technical memorandum presents an analysis of five years of crash data obtained from the UDOT Office of Traffic and Safety (UDOT 2007d). The following summarizes the findings of that analysis. For complete information, see the separate U.S. 40 Corridor Study Crash History and Analysis (HDR 2007a).

#### Methodology

The UDOT crash database from the Office of Traffic and Safety provides a variety of information about each reported crash. In some instances, not all information is provided for each crash in each location. Information about each individual crash is provided by the police officers called to the scene and depends on the specifics of each report. The information included in an accident report generally includes:

- Location by milepost (as estimated by reporting officer)
- Crash severity and number of fatalities and injuries
- Number and type of vehicles
- Drivers action for each vehicle involved
- Type of collision



- Location in relation to intersection and roadway
- Contributing circumstances
- Weather, roadway surface, and light conditions
- Day-of-week, hour-of-day, and date of crash

Crash data were obtained for the years 2001 through 2005. The analysis first reviewed general accident statistics, including crash history, accident rates, accident severity, and related costs. The data were then reviewed more closely for information regarding accident frequency and location, relationship to roadway intersections (junctions), time of year (month), number of vehicles involved, roadway surface condition, type of vehicle involved, type of collision, and type of accident. Finally, reviewers examined information about driver age and contributing circumstances.

## Summary of Findings

Analysis of the available data resulted in the following findings:

- The number of crashes increased significantly since 2003 (that is, over 2001 through 2003 numbers).
- The crash rate was above the statewide average for the rural sections of the corridor for the last three years of the study.
- The majority of the crashes (84%) occurred on a dry roadway surface.
- Failure to yield right-of-way (16%), improper lookout (15%), and maintaining too fast a speed (15%) were the three main contributing circumstances.
- *Collision with a moving vehicle* was the most frequent crash occurrence (40%) and the most frequent fatal crash occurrence (73%).
- Wild animals were involved in 32% of crashes in the study corridor. Wild-animal-related incidents were not clustered in one particular area, but occurred regularly throughout the corridor. The actual number of these types of accidents may actually be higher since many collisions involving motor vehicles and wild animals are not reported.
- After maintaining too fast a speed (17%), failure to yield (11%) was the most common contributing circumstance to fatal crashes.
- Only one out of every four crashes was at an intersection or was intersection related.

- Young drivers (ages 15 to 19) constitute a disproportionately high percentage of all drivers involved in crashes in the corridor. Drivers in this age group were involved in 16% of the crashes in the study corridor.

## 2.4 Bicycle and Pedestrian Facilities

Due to its rural nature, U.S. 40 does not have formal bike lanes or bikeways. The project segments that travel through more urbanized areas (Segments 3, 5, and 7) have sections of sidewalk available for pedestrian use. Bicycle use of existing shoulders and crossings is also more prevalent in these areas. Segment 5, which includes Roosevelt and Ballard, is crossed by a greenbelt that is used by cyclists and pedestrians.

The bicycle/motor vehicle crash rates of all counties along the corridor are lower than the state average (see Table 2.4-1, Bicycle and Pedestrian/Motor Vehicle Crash Rates 1995–2004). Recreational cyclists traveling long distances ride along the shoulders of U.S. 40. According to the Utah Bicycle Suitability map (UDOT 2004), most sections of the highway outside of the city limits provide a shoulder width of more than four feet. Two to four-foot wide shoulders are present near Strawberry Reservoir (about MP 45 through MP 50), the intersection of U.S. 40 and SR 208 (about MP 68), and between Naples and Jensen (about MP 148 to MP 157). The bicycle suitability maps indicates that U.S. 40 has shoulders less than two-feet-wide over Daniels Summit and through the city of Vernal, though the U.S. 40 video log shows that such narrow shoulders are not consistently present in those areas (see Section 2.1.5, Lane and Shoulder Width). As shown in Table 2.4-1, Bicycle and Pedestrian/Motor Vehicle Crash Rates 1995–2004, the pedestrian/motor vehicle crash rates for the three counties along the corridor are also lower than the state average.



Table 2.4–1. Bicycle and Pedestrian/Motor Vehicle Crash Rates  
1995–2004

Location	Rate <sup>a</sup>	Statewide Ranking
Bicycle/Motor Vehicle Crashes		
Statewide	39.15	NA
Wasatch County	23.30	9
Duchesne County	13.21	22
Uintah County	21.33	14
Pedestrian/Motor Vehicle Crashes		
Statewide	48.24	NA
Wasatch County	27.18	14
Duchesne County	26.86	15
Uintah County	25.73	17

<sup>a</sup> Rate is number per 100,000 people

Source: Utah Department of Health 2006

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## 3.0 Existing Land Use Conditions and Demographics

### 3.1 Land Use

Operation of the U.S. 40 corridor is influenced by existing land uses. Future or planned land uses will also affect how the highway functions and might contribute to future roadway improvement needs. The following is a summary of existing and planned land uses along the U.S. 40 project corridor. More detailed information about land use along the project corridor is available in the U.S. 40 Land use Inventory technical report (HDR 2007b).

#### 3.1.1 General Land Use Characteristics

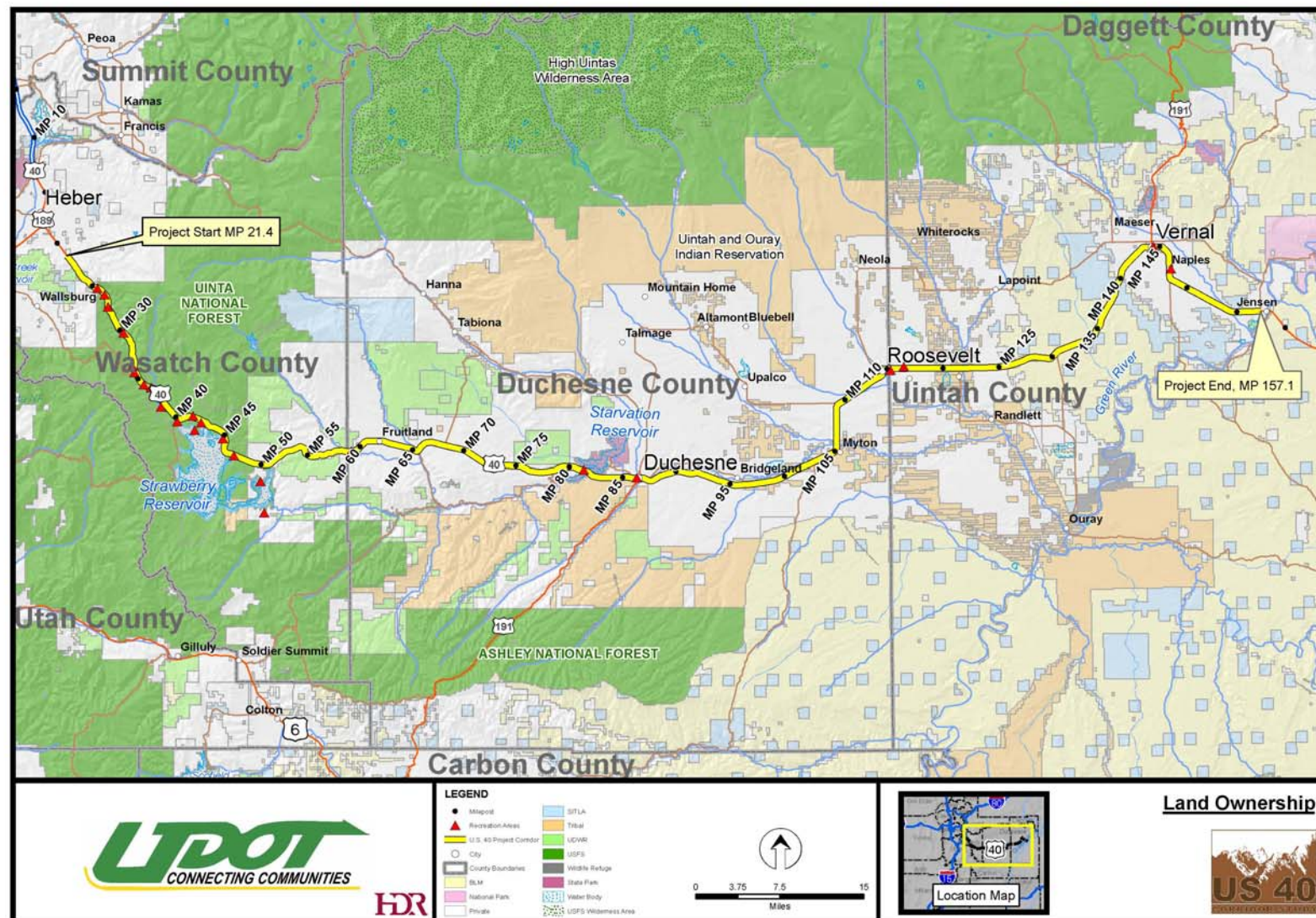
Most of the land in the three counties through which the project corridor passes (Wasatch, Duchesne, and Uintah Counties) is publicly owned (Figure 3-1). However, as shown in Table 3.1-1, most of the land along the highway is privately owned. These statistics indicate that private landowners very likely access their land using U.S. 40 and its connecting roads.

Table 3.1–1. Land Ownership along U.S. 40

Owner / Administrator	Acres	Percent of Total
Federal agencies	41,514.38	23.63%
U.S. Forest Service	27,668.03	15.75%
Bureau of Land Management	13,846.35	7.88%
State agencies	14,832.25	8.44%
Trust Lands	5,119.33	2.91%
Parks	2,463.02	1.40%
Division of Wildlife Resources	7,249.90	4.13%
Ute Tribe	12,972.97	7.39%
Other	106,300.80	60.52%
Private	103,658.31	59.02%
Water bodies	2,642.49	1.50%

Source: USU 2006

Figure 3-1. Land Ownership





There are six incorporated cities situated next to U.S. 40 in the project area: Duchesne, Myton, and Roosevelt in Duchesne County and Ballard, Vernal, and Naples in Uintah County. There are a number of other towns and settlements along or near the corridor as well, including Fruitland, Fort Duchesne, and Jensen. For the most part, these towns rely on the larger population centers for goods and services, though some services are available in each settlement.

### 3.1.2 Local Government Agencies

#### Wasatch County Land Use

Wasatch County is the westernmost county on the project corridor. Its western boundary is about 40 miles east of Salt Lake City, the proximity of which greatly affects population and employment in the county. Most people who live in Wasatch County drive west to go to work in Park City and even the Salt Lake Valley. The year-round population and irrigated farmlands are concentrated in the Heber and Round Valleys, which are outside (west) of the project area. Strawberry Valley, which is along the project corridor to the east of Daniels Summit, supports a seasonal (summer) population focused on Strawberry Reservoir.

Future land use and planning for Wasatch County is detailed in the Wasatch County General Plan (Wasatch County Planning Commission 2001). Most land along U.S. 40 is administered by the USFS, though there is some Utah Division of Wildlife Resources land west of the reservoir (see Land Ownership figure on the following page). Privately held lands are concentrated near Strawberry Reservoir. The BLM administers a small piece of land at the western edge of the project corridor (Wasatch County Planning Commission 2001; SITLA 2007a). There are no incorporated cities along the project corridor in Wasatch County.

The Wasatch County General Plan includes a 20-year transportation improvement program, which is correlated with expected land use patterns over the same time period. The transportation improvement program does not identify any improvements to U.S. 40 in the project area. The recommended classification for U.S. 40 from Heber east to the Wasatch–Duchesne County line is Arterial, which is described in the General Plan as needing to “have right-of-ways that include adequate space for the roadway, trails, and green space.” Further, the General Plan states that driveway access to arterial roads should be discouraged and that access should be limited to street intersections (Wasatch County Planning Commission 2001).

## Duchesne County Land Use

The U.S. 40 corridor traverses the width of Duchesne County, a road distance of about 57 miles. The highway passes through three incorporated cities: Duchesne, Myton, and Roosevelt.

Like Wasatch County, most land in Duchesne County is publicly owned, though the majority of land along U.S. 40 is privately owned (Duchesne County 1997; SITLA 2007b). Starvation State Park, home to Starvation Reservoir, is situated on U.S. 40 just west of the city of Duchesne. SR 191, a major highway linking the Uintah Basin with areas to the south, intersects U.S. 40 in the city of Duchesne. Tribal lands are scattered along the U.S. 40 corridor, though there is a contiguous area of tribal land adjacent to the highway between Starvation State Park and the city of Duchesne.

The Duchesne County Plan, completed in 1997 and amended in 1998 and 2005, describes county policies, objectives, and action steps to guide the county's future. The plan does not specify a timeframe and does not include a transportation plan but does include policies that address access to and across public lands. The county's transportation system map is incorporated into the general plan by reference.

According to the County zoning map (Duchesne County, no date), private land along the U.S. 40 corridor is mostly rural residential and agricultural, though there are pockets of denser residential and commercial development outside the cities. The area around Fruitland (about MP 62) is designated for commercial uses, as is the area where SR 208 intersects U.S. 40 (about MP 68) and an area north of the highway just east of Starvation Reservoir (about MP 83). A long commercial corridor begins just northeast of the city of Myton and continues to the city limit of Roosevelt. Land identified for residential development (one dwelling unit per 2.5 acres) is concentrated just west of Fruitland, around the city of Duchesne, and along the highway just north of Myton. Industrial uses are located just north of the city of Duchesne, just north of Myton, and just southwest of Roosevelt. Land uses associated with the incorporated cities are discussed below.

### Duchesne

Not to be confused with the community of Fort Duchesne in Uintah County, the city of Duchesne is the westernmost incorporated city in the study area. The city is the seat of Duchesne County and is located at the intersection of U.S. 40 and SR 191, the major route into the Uintah Basin from the south (SR 191 and



U.S. 40 are the same roadway from Duchesne to Vernal about 60 miles to the east).

U.S. 40 is also known as Main Street in Duchesne. On its land use map, the City designates all land along the highway as Commercial except for a short section on the eastern edge of the city along U.S. 40 that is identified as Residential-Agriculture (suitable for rural residential development). In general, residential land south of the highway is designated for rural residential use, while residential land north of the highway is identified for more traditional residential use as well as rural residential use. There is an area of the very eastern city limit south of U.S. 40 that is designated for Industrial use. There is a large area of tribal land south of the city along the SR 191 corridor.

### **Myton**

Myton is the smallest incorporated city in the study area (population 539 in 2000 [U.S. Census Bureau 2000]). It is situated about 18 miles east of the city of Duchesne on the Duchesne River. Much of the land around Myton is tribal land. Land use in Myton is dominated by rural residential development and agricultural support activities.

### **Roosevelt**

Roosevelt is the largest city in Duchesne County. The city center is located about 28 miles east of Myton and one mile west of the Duchesne County-Utah County line at the intersection of SR 121 and U.S. 40. Roosevelt serves as the commercial center for the nearby small towns and settlements in both counties, including the nearby settlements of Ballard (population 566 in 2000 [U.S. Census Bureau 2000]) and Fort Duchesne (population 621 in 2000 [U.S. Census Bureau 2000]) in Utah County.

According to the Roosevelt City Planner, most land in the city limits and adjacent to U.S. 40 is identified for commercial and industrial uses (Eschler 2007). The city's zoning map assigns a Commercial/Light Manufacturing designation to land along the highway between the southwestern city limit and about 800 South. The city's industrial park, which is located near the southwestern city limit, is accessed from U.S. 40. North of 800 South, the Commercial/Light Manufacturing zone continues on the west side of the highway to about 400 South, and land on the east side of the highway is designated as Commercial-Selling. The remainder of the highway corridor through the city maintains the Commercial-Selling designation. Residential land is evenly dispersed on either side of the highway throughout the city, with densities decreasing with distance

from the highway. There is very little agricultural land within the city limits; what is present is situated on the city's boundaries, where it abuts land under the jurisdiction of the counties. There are several state-owned parcels just outside the city's boundaries.

## Uintah County Land Use

Uintah County is the easternmost county in Utah along U.S. 40. The highway measures 60 miles from the Duchesne County-Uintah County line to the Utah-Colorado border, though the project corridor extends only about 42 miles from the county line to the community of Jensen near the intersection of U.S. 40 and S.R. 129. This intersection is the "gateway" to the Dinosaur National Monument, a major tourist destination.

As in Wasatch and Duchesne Counties, most of the land in Uintah County is publicly owned. Ownership along U.S. 40 is a mixture of public (state and federal), tribal, and private land, with most of the private land being concentrated in and around the cities of Vernal and Naples. Ute tribal land along the highway is concentrated in the western part of the county near the tribal headquarters of Fort Duchesne, where tribal land is intermixed with private land. BLM-administered land is concentrated along a 10-mile stretch of U.S. 40 west of Vernal, an area that also contains a concentration of state trust lands. Most land east of Vernal and Naples is privately owned, though there is a limited amount of state trust and BLM-administered land in this area.

Uintah County completed a General Plan update in 2005 (Uintah County 2005a). The land use and transportation system maps were adopted after the plan was adopted but are still considered part of the General Plan. The land use map primarily assigns the less-developed portions of the corridor the Agriculture (western and eastern ends of the project corridor) and Mining and Grazing designations. The map shows limited amounts of commercially designated land associated with the unincorporated communities of Fort Duchesne and Jensen. Land uses associated with the incorporated cities are discussed below.

The 2006 Uintah County Transportation System Map (Uintah County 2005b) simply shows U.S. 40 as a state or federal highway. Though the General Plan policies do not address U.S. 40 specifically, the County does have guidance for access to and from county roads, including county approval of any new public or private access.



## **Ballard**

Ballard is the westernmost city in Uintah County on U.S. 40. Ballard abuts Roosevelt in Uintah County and is very close to the community of Fort Duchesne.

Land that abuts U.S. 40 in Ballard is zoned for commercial use. Industrial land is concentrated on the eastern end of the city, with most industrial land occurring north of U.S. 40. Rural residential development is evenly distributed north and south of the highway and is concentrated in the western two-thirds of the incorporated area. Land on the far north and south ends of the city is zoned for agricultural use. The Ballard city offices are off the highway in the southern part of this small city at the intersection of 1000 South and 2500 East.

## **Vernal**

Vernal, the seat of Uintah County, is about 30 miles east of Roosevelt. The city is an important regional center for the oil and gas industries and for recreation.

SR 191 splits from U.S. 40 in Vernal and provides a connection to the Flaming Gorge National Recreation Area.

Land in Vernal and along the U.S. 40 corridor is primarily zoned for commercial and industrial uses. Between the western city limit and about 100 South, most of the land is identified as Planned Commercial. There are pockets of residential agricultural land at about 2100 South and at the intersection of U.S. 40 and 1500 West. Some residential parcels are situated near the intersection of U.S. 40 and Canal Road, and the land on which the Vernal Middle Schools sits southeast of the intersection of U.S. 40 and 100 South is identified as residential. North of 100 North, U.S. 40 turns to the east. Land in this area, which is the heart of downtown Vernal, is zoned as Central Commercial with the exception of Kiwanis Park, which is zoned for use as a park. The city offices are located in this part of the city at 100 East. Commercial zoning continues until about 800 East, where the zoning changes to Industrial. The land between this point and the eastern city limit maintains the Industrial zoning.

## **Naples**

Naples is a small city about two miles southeast of Vernal. Like Vernal, commerce in Naples is focused on the oil and gas industries and recreation.

Naples is the fastest-growing city in the project area (U.S. Census Bureau 2000; Governor's Office of Planning and Budget 2005).

Land in the northern part of Naples is zoned for industrial uses. This is a continuation of Vernal's industrial zone. South of about 1750 South, the zoning changes to commercial. There is a Commercial Design Guideline Overlay area all along U.S. 40 within the city. The Vernal Airport is accessed from U.S. 40 in Naples. The Naples City offices are located in the southern part of the city where U.S. 40 turns southeast at the intersection of 1500 East.

The Naples Transportation Plan (Naples City Corporation 2006) identifies U.S. 40 as a 110-foot-wide arterial. The plan also notes that growth in the area will require improvements to the intersections of U.S. 40 and 1500 South and U.S. 40 and 500 South. UDOT is currently installing a signal at 500 South in Vernal; this is a different intersection than the 500 South in Naples that intersects U.S. 40.

### 3.1.3 State and Federal Government Agencies

#### U.S. Forest Service

The USFS manages much of the land along the western end of the project corridor. USFS ownership begins in Daniels Canyon and extends to the east side of Strawberry Reservoir. There are a few areas of private ownership in this stretch of U.S. 40 (such as at the intersection of East Main Canyon Road and U.S. 40, the area west of the reservoir, and around the reservoir itself), but USFS is the primary landowner in this area.

This land is part of the Uinta National Forest. The project corridor passes through the Strawberry Reservoir Management Area, as described in the Uinta National Forest Plan. The reservoir is the main feature of the management area, and U.S. 40 provides the primary access to the area, though the area is managed for multiple uses. The area experiences heavy recreation use due to its notable sport fishery and its proximity to population centers in the Salt Lake and Utah Lake Valleys. The forest plan recognizes the importance of U.S. 40 in the Strawberry Reservoir Management Area but does not prescribe any specific goals or objectives for the highway's relationship to future resource management in the area.

#### Bureau of Land Management

Most of the federal BLM-administered land along the project corridor is between the eastern boundary of the Uintah-Ouray Indian Reservation and Vernal, though there are small areas of BLM administration on the western end of the corridor near Heber and on the eastern end near Jensen. Most of the BLM-administered



land along the corridor is managed by the BLM's Vernal Field Office. The BLM has identified formal Transportation and Utility Corridors throughout the region, including along and near U.S. 40 between the eastern boundary of the Uintah-Ouray Indian Reservation and the state trust lands west of Vernal and between the eastern limits of the city of Naples to the Utah-Colorado state line. According to BLM, the purpose of designating these transportation corridors is to show where the agency encourages the placement of utilities, and the corridors largely exist in areas where there are existing facilities. Any improvements to U.S. 40 would not affect the way BLM currently manages the land along these corridors. If improvements to U.S. 40 required acquisition of right-of-way from BLM, then that agency would consider how such an action could affect overall ownership and management of its landholdings in the area (Howard 2007).

### State of Utah School and Institutional Trust Lands Administration

The State of Utah School and Institutional Trust Lands Administration (SITLA) owns parcels of land and mineral-only lands (subsurface land) all along U.S. 40. Most SITLA-owned land along the project corridor is situated between the eastern boundary of the Uintah-Ouray Indian Reservation and the city of Vernal. SITLA-owned mineral-only lands occur in Daniels Canyon in Wasatch County and between the cities of Duchesne and Roosevelt in Uintah County.

SITLA land, which is managed for the financial benefit of 12 real estate trusts, is occasionally made available for purchase by private parties. SITLA surface land can also be leased for telecommunication towers, commercial and industrial enterprises, cabin sites, and agriculture; be permitted for grazing; be used for easements for roads, pipelines, power lines, and other types of transmission lines; and be used short-term for activities such as filming (such as movies and commercials) and other organized events (such as cross-country races). Subsurface lands can be leased for mineral resources such as oil, gas, coal, sand, and gravel.

### State of Utah Division of Wildlife Resources

The Utah Division of Wildlife Resources manages a number of wildlife management areas (WMAs) on or near U.S. 40. A portion of an unnamed WMA intersects the highway at about MP 23, and the Currant Creek WMA touches U.S. 40 at about MP 58. Other WMAs that are close to but not on the corridor include the Strawberry River WMA and the Tabby Mountain WMA (DWR 2002). The WMAs are managed for passive recreational use (such as hiking and wildlife viewing), habitat protection, big-game hunting opportunities, fishing,

and as wildlife refuges. Overnight camping is allowed at the Currant Creek and Tabby Mountain WMAs.

### Uintah and Ouray Indian Reservation

The Uintah and Ouray Reservation is located in the heart of the Uintah Basin. The reservation headquarters are in Fort Duchesne, which is just south of U.S. 40. It is the second largest Indian reservation in the United States and encompasses over 4.5 million acres. The Uintah Mountains define the northern border of the reservation, while the Green River runs through the reservation's southern end.

The tribal government oversees the reservation and about 1.3 million acres of off-reservation trust land. There are several distinct residential communities associated with the reservation. The tribal government operates several businesses that also define much of the land use, including mining (oil, gas, tar sands, and gilsonite) and livestock production.

#### 3.1.4 Land Use Survey

In April of 2007, HDR conducted a “windshield” (driving) survey of the U.S. 40 corridor. This study was conducted in order to verify information on land use maps obtained from cities in Uintah and Duchesne counties and from the Wasatch, Duchesne, and Uintah County governments. The survey is presented according to eight segments along the corridor; more detailed information is available in the Land use Inventory technical report.

***Segment 1: Project Start (MP 21) to Daniels Summit (MP 34).*** This 13-mile-long segment passes through mostly undeveloped land in Wasatch County. One USFS toilet area is available at about MP 34. However, this site is intended for use during winter recreation activities and is not maintained during summer months. Most land along the highway is managed by USFS.

***Segment 2: Daniels Summit (MP 34) to the Western Duchesne City Limit (MP 86).*** This segment, which is 52 miles long, passes through mostly undeveloped land in Wasatch and Duchesne Counties. Most land between Daniels Summit and Strawberry Reservoir is managed by USFS, though there is limited private recreational development around the reservoir. Between the eastern side of the reservoir and western Duchesne County, the corridor passes through state-owned land (WMAs) and private land. Most of the land between the Wasatch County–Duchesne County line and the city of Duchesne is privately owned and is used for agriculture with scattered residential use. The land around



Starvation Reservoir is managed as a state park. A UDOT rest area is available on the south side of U.S. 40 at MP 70.

***Segment 3: Incorporated Area of Duchesne City (MP 86 to MP 88).*** This two-mile-long segment in Duchesne County consists of the portion of the corridor within the Duchesne city limits. Development is typical of that found in rural towns. Land along the highway is dedicated primarily to commercial uses, though there is some residential and industrial development.

***Segment 4: Eastern Limit of Duchesne (MP 88) to the Western Limit of Roosevelt (MP 112).*** This 24-mile-long segment covers an area dominated by private and tribal land. This area supports some agricultural production and limited oil and gas development with scattered residential use. A residential community called Utah Mini Ranches is located just west of the Strawberry River turn-off between MP 88 and MP 96.5. This segment passes through the city of Myton at MP 104.5 to MP 106. Development in Myton is typical of rural towns, with scattered residential and agriculture. The segment is entirely within Duchesne County.

***Segment 5: Roosevelt and Ballard Incorporated Areas (MP 112 to MP 119).*** This segment, which is 7 miles long, encompasses the area within the incorporated limits of the cities of Roosevelt and Ballard. The Duchesne County–Uintah County line marks the political division between Roosevelt and Ballard, but the area functions as a single, more urbanized area. A privately owned paint ball park is located on the south side of the highway at MP 118. Development is dominated by commercial uses, though there is some residential development and agricultural use interspersed along the segment.

***Segment 6: Eastern Limit of Ballard (MP 119) to the Western Limit of Vernal (MP 142).*** This 23-mile-long segment is characterized by tribal land and private land in the western half and BLM-administered and state-owned land in the eastern half. A school is located on U.S. 40 at MP 119.5, and low-density residential and commercial use continues until MP 122. Agricultural use occupies land along MP 122 through 125.5. A rest area with picnic facilities is located at about MP 140. There is some oil- and gas-related development along the highway, though most oil and gas wells are south of U.S. 40 on tribal and BLM-administered land. This segment is entirely within Uintah County.

***Segment 7: Vernal and Naples Incorporated Areas (MP 142 to MP 149).*** This seven-mile-long segment is dominated by urban development normally associated with rural cities. Development immediately adjacent to the highway is characterized by commercial and industrial development, with limited residential development interspersed throughout. The city of Naples begins at about MP 148

where agricultural and residential use is interspersed with commercial and industrial development.

**Segment 8: Eastern Limit of Naples (MP 149) to Project End (MP 157).** This segment, which is 8 miles long, is mostly under private ownership and is characterized by rural residential and agricultural development. A power station is located along the north side of U.S. 40 at MP 151. A newly graded area that appears to be prepared for development is located at MP 154.9, but it is unknown if this area will serve commercial or residential use. A church and park are located on the north side of the highway at MP 156.5. State-owned land that touches the highway just west of Jensen supports a limited number of oil and gas wells.

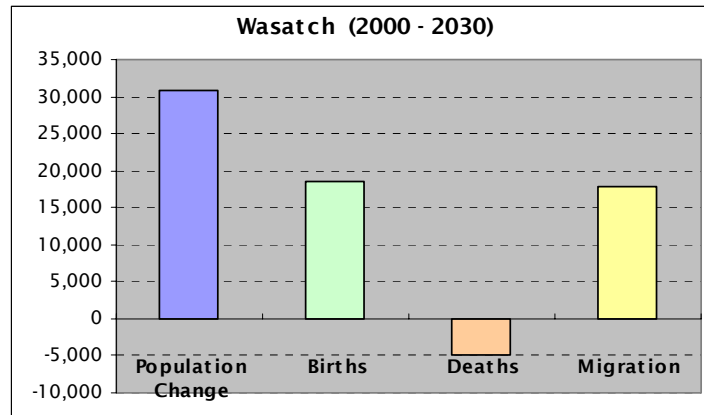
## 3.2 Demographics

Operation of the U.S. 40 corridor is influenced by existing population and employment in the area. Population and employment growth will affect how the highway functions and might generate the need for future roadway improvements. The following is a summary of current and projected population and employment in the cities and counties along the U.S. 40 project corridor. Most of the information presented below is based on the best available data and may not reflect localized population and employment trends. More detailed demographics information is available in the Technical Memo on Population and Employment for Wasatch, Duchesne, and Uintah Counties (HDR 2007c).

### 3.2.1 Population

Although Wasatch County is only marginally within the project corridor, demographic changes in the county, particularly in the Heber City area, might affect the western end of the corridor. Much of the traffic on this western end of the corridor that originates in Wasatch County and beyond would be related to recreational use in the Uintah Basin. However, employment growth in the Uintah Basin might also contribute to the continued development of the Heber City-Midway area, resulting in more trips between the basin and eastern Wasatch County. As one of the most rapidly growing counties in Utah, Wasatch is projected to grow at an average of 3.72% per year between 2000 and 2030 and reach 30,760 people in 2030 (15,433 people in 2000; Figure 3-2). Migration accounts for almost 60% of the projected growth (Governor's Office of Planning and Budget 2005a).

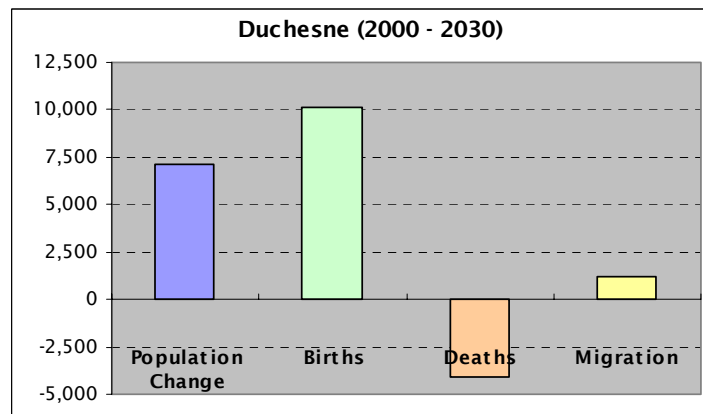
Figure 3–2. Wasatch County Projected 30–Year Population Growth



Source: Governor's Office of Planning and Budget 2005a

The Governor's Office of Planning and Budget projects a total population of 21,500 people in Duchesne County by 2030 (Governor's Office of Planning and Budget 2005a). This will mean adding 7,100 people between 2000 and 2030 at an approximate annual growth rate of 1.35%. Natural growth (births minus deaths) will account for 83% of the population increase between 2000 and 2030 (Figure 3-3).

Figure 3-3. Duchesne County Projected 30-Year Population Growth

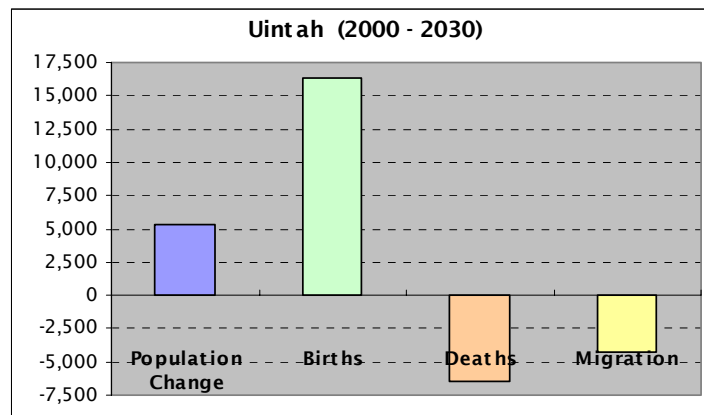


Source: Governor's Office of Planning and Budget 2005a

The Governor's Office of Planning and Budget expects the population in Uintah County to increase by 5,350 people between 2000 and 2030 (Figure 3-4). The Governor's Office projects an annual growth rate of 0.64% between 2000 and 2030, resulting in a population of 30,760 people by 2030 (Governor's Office of

Planning and Budget 2005a). Given the recent increase in oil and gas development in the basin, the Governor’s Office of Planning and Budget projections may be lower than the actual annual growth rate of the more populated areas of Uintah County.

Figure 3–4. Uintah County Projected 30–Year Population Growth

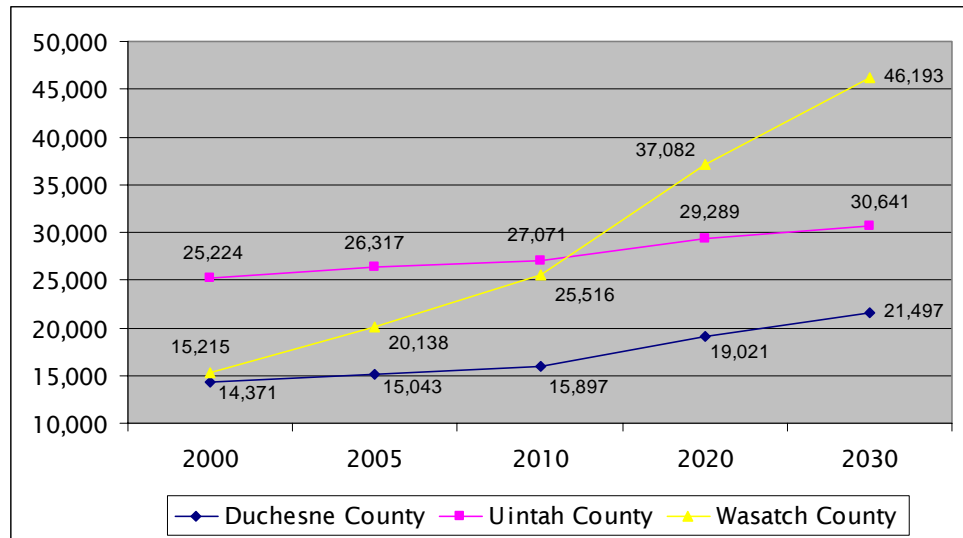


Source: Governor’s Office of Planning and Budget 2005a

Overall, the Governor’s Office of Planning and Budget population projections show moderate growth in both Duchesne and Uintah County and very rapid growth in Wasatch County. As mentioned above, recent oil and gas development may result in a growth rate for Uintah County that is not reflected in the Governor’s Office of Planning and Budget projections. Figure 3-5 compares the projected population growth for the counties along the corridor at each five-year increment and the total expected population by 2030.



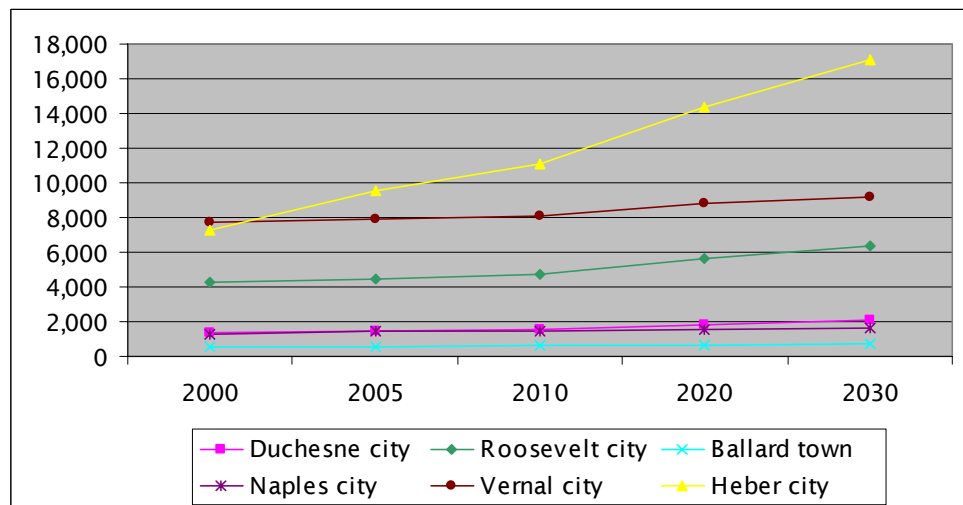
Figure 3–5. Comparison of Projected 30-Year Population Growth for Wasatch, Duchesne, and Uintah Counties



Source: Governor's Office of Planning and Budget 2005a

Cities along the corridor are projected to grow between 0.6% and 1.3% annually between 2000 and 2030. Heber City, east of the project study area is projected to grow at 2.9%. Figure 3-6 compares the cities' projected population growth.

Figure 3–6. Comparison of Projected 30-Year Population Growth for Cities Along the U.S. 40 Project Corridor



Source: Governor's Office of Planning and Budget 2005a

Table 3.2-1 summarizes the expected population growth for each county and city in the corridor as well as state totals.

**Table 3.2-1. Expected Population Growth along the U.S. 40 Project Corridor**

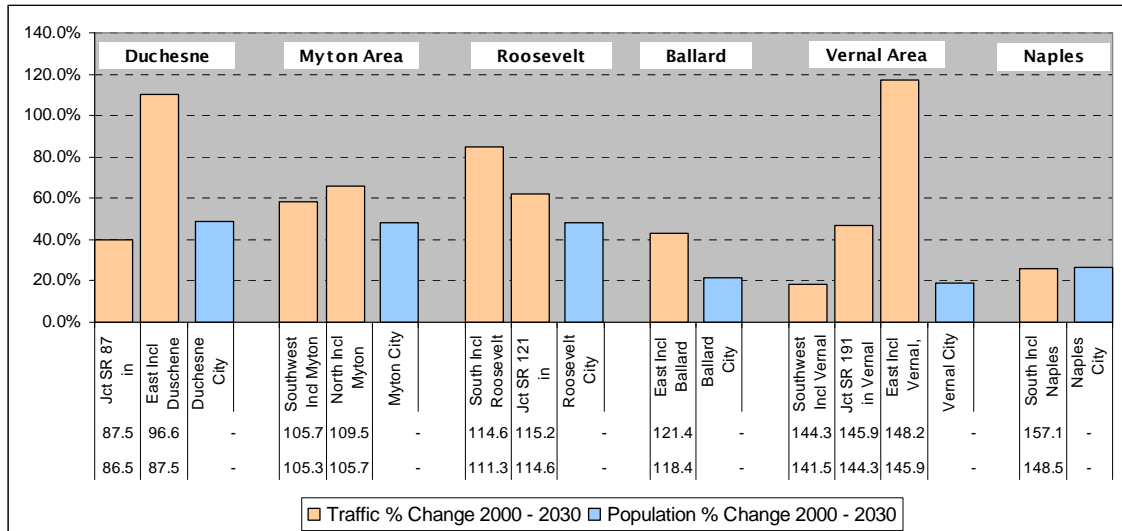
Area	Population					Average Annual Growth Rate
	Census 2000	2005	2010	2020	2030	
Utah	2,233,169	2,528,926	2,833,337	3,486,218	4,086,319	2.03%
Wasatch County	15,433	20,138	25,516	37,082	46,193	3.72%
Heber city	7,291	9,521	11,133	14,361	17,081	2.88%
Duchesne County	14,371	15,043	15,897	19,021	21,497	1.35%
Duchesne city	1,408	1,466	1,549	1,854	2,095	1.33%
Myton city	539	559	591	707	799	1.32%
Roosevelt city	4,299	4,462	4,716	5,642	6,377	1.32%
Uintah County	25,224	26,317	27,071	29,289	30,641	0.65%
Ballard town	566	590	607	657	687	0.65%
Naples city	1,300	1,412	1,453	1,572	1,644	0.79%
Vernal city	7,714	7,898	8,125	8,790	9,196	0.59%

Source: Governor's Office of Planning and Budget 2005a

Figure 3-7 compares the projected percentage increase in traffic along the more urbanized segments of the corridor, with the projected percentage increase in population in the cities along those segments. The increases in traffic, particularly in Duchesne and Vernal, are much higher than the expected population growth. Although a high percentage of through traffic could partially explain this, there seems to be a need for adjustment between the traffic and population projection in the corridor.



Figure 3–7. Comparison of Projected 30–Year Population Growth and Traffic Along the U.S. 40 Project Corridor



Source: Governor's Office of Planning and Budget 2005a; Utah Department of Transportation 2005b

### 3.2.2 Employment

The Governor's Office of Planning and Budget provides employment projections at the county level only (Governor's Office of Planning and Budget 2005b).

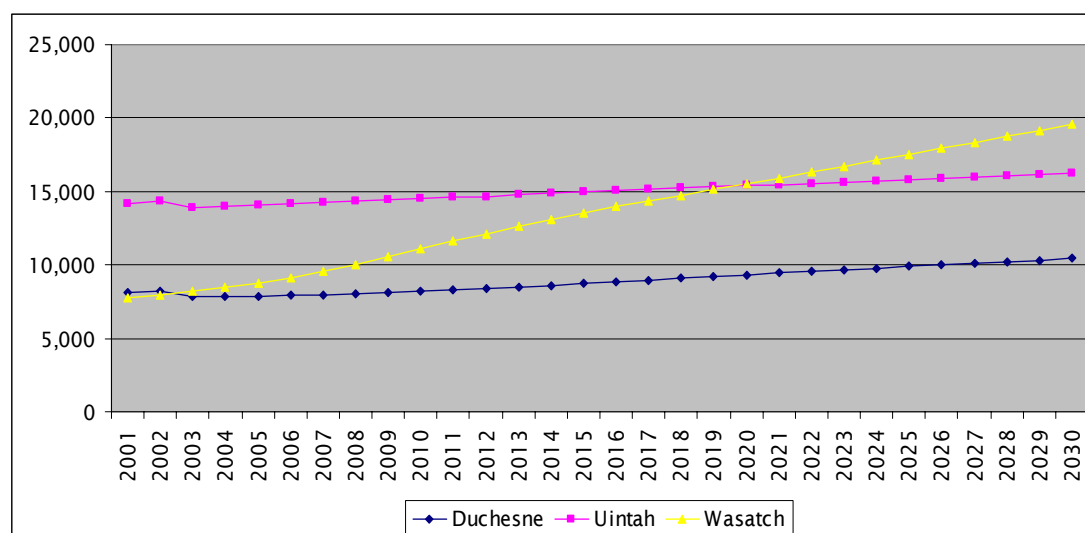
Except for Wasatch County, which is expected to grow at 3.15% per year, employment growth in the counties along the corridor is expected to be less than half to a third of the rate expected for the state (0.84% for Duchesne County and 0.45% for Uintah County compared to 1.96 for the State of Utah). Table 3.2-2 and Figure 3-8 summarize employment growth by county.

Table 3.2–2. Employment Growth by County along the U.S. 40 Corridor

Area	Employment					Average Annual Growth Rate
	2001	2005	2010	2020	2030	
Utah	1,392,577	1,482,410	1,697,725	2,084,097	2,493,070	1.96%
Duchesne County	8,113	7,888	8,189	9,333	10,437	0.84%
Uintah County	14,188	14,071	14,534	15,394	16,216	0.45%
Wasatch County	7,727	8,788	11,081	15,543	19,607	3.15%

Source: Governor's Office of Planning and Budget 2005b

Figure 3–8. Projected 30-Year Employment Growth for Wasatch, Duchesne, and Uintah Counties



Source: Governor's Office of Planning and Budget 2005b

Most of the Governor's Office of Planning and Budget projections do not seem to reflect the current rate of employment activity related to the oil and gas industries in Uintah County. Preliminary traffic projections for the corridor indicate a higher level of activity than that explained by the projected population



and employment numbers, even when assuming a high percentage of through traffic (see Section 2.3.1 above for more detailed information about traffic conditions). Because of this, it is recommended that any additional analysis that uses the current (2005) Governor's Office of Planning and Budget projections account for this variation.

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## 4.0 Existing Transportation Plans

### 4.1 Utah Department of Transportation Plans and Guidance

UDOT prepares a statewide transportation plan and a complementary but separate statewide transportation improvement program (STIP). These planning processes are guided by state and federal law and as well as UDOT's goals, which are:

- Take Care of What We Have
- Make the System Work Better
- Improve Safety
- Increase Capacity

UDOT's Systems Planning and Programming group, as well as the regional offices, carry projects from the planning stages through construction. The following summarizes how the statewide transportation plan and statewide transportation improvement program address improvements to U.S. 40 and provides information about UDOT's environmental review procedures.

#### 4.1.1 Statewide Transportation Plan

The Statewide Transportation Plan is made up of five separate plans: a long-range transportation plan (LRTP) and regional transportation plans prepared by the state's four designated metropolitan planning organizations. The LRTP is the plan for rural and small urban areas in Utah and covers all highways designated as state routes, U.S. highways, and interstates outside of the metropolitan boundaries. The U.S. 40 corridor is addressed in the LRTP because it is not in a designated metropolitan planning area.

The LRTP is updated every four years. UDOT released a new draft LRTP covering the period between 2007 and 2030 on March 22, 2007. The draft plan addresses projects in three phases as well as an "unfunded phase". U.S. 40 projects that are included in the draft LRTP include:

- Widening from U.S. 189 (in Heber City) to Daniels Road (mouth of canyon), 9.8 miles in Wasatch County
- Widening of SR 121 from U.S. 40 to MP 5 (Roosevelt), five miles in Duchesne County

- Widening from Vernal to SR 149 (Jensen), 10.9 miles in Uintah County

These projects are all included in the “unfunded Phase” category. Passing lanes in all areas are included in the three funded phases. The LRTP also notes that additional priorities may be identified from future needs analyses in emerging small urban areas, including Vernal.

#### 4.1.2 Statewide Transportation Improvement Program

UDOT’s STIP is a five-year plan of highway and transit projects for the state of Utah. The STIP is published every year and includes transportation projects on the state, city, and county highway systems, as well as projects in the national parks, national forests, and Indian reservations. These projects are funded through a number of federal and state programs.

The STIP serves two basic purposes. First, it is the basis for approval of federal-aid highway and transit funds by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). Second, the STIP is UDOT’s official work plan for the development of projects through conception, environmental studies, right-of-way acquisition, planning, and advertising for construction.

Table 4.1-1 lists the current 2007-2012 STIP projects for the U.S. 40 corridor. It should be noted that one of the purposes of this corridor study is to identify additional projects for inclusion in the next STIP as well as subsequent STIPs.

Table 4.1–1. 2007–2012 STIP Projects Along the U.S. 40 Corridor

Project Number	Project Type	Project Location
<i>Wasatch County</i>		
NH-0040(52)29	Rotomill and overlay road	U.S. 40–Clegg Canyon to Strawberry Valley
F-R399(18)	Concrete slab replacement	U.S. 40 and SR 189
NH-0040(53)40	Asphalt pavement reconstruction	U.S. 40–Daniels Summit to Strawberry Maintenance Station
STP-3100(2)1	Preliminary engineering	Currant Creek Road
<i>Duchesne County</i>		
BHF-0040(0)83	Bridge rehabilitation	U.S. 40 bridge over Starvation Reservoir
S-0040(64)88	Passing lanes	U.S. 40–between Duchesne and Roosevelt
NH-0040(5)111	Widening (to 3 lanes)	U.S. 40– west Roosevelt to Ioka Junction
<i>Uintah County</i>		
SP-9999(738)	Reconstruct intersection for traffic signal	U.S. 40 and 500 South in Vernal



Table 4.1–1. 2007–2012 STIP Projects Along the U.S. 40 Corridor

Project Number	Project Type	Project Location
NH-0040(49)115	Widening (to 3 lanes)	U.S. 40–east Roosevelt to Ballard eastern city limit
S-0040(60)136	Widening and adding passing lanes	U.S.40–“Twists” to Vernal
STP-LC47(10)	Beautification	Vernal city

Source: UDOT 2007a

### 4.1.3 UDOT Environmental Services

UDOT has an established process for environmental review of proposed projects. If projects receive federal funding or require some other sort of federal action, such as issuance of a federal permit, UDOT works closely with the responsible federal agency to ensure that the environmental review also meets that agency’s needs. UDOT has specific guidance for the preparation of environmental documents, analysis of impacts (such as those related to traffic noise), and preparation of technical reports (such as geotechnical studies). If carried forward, projects identified through the U.S. 40 corridor study would be evaluated through the Environmental Services division, as needed and appropriate.

## 4.2 Federal Agency Plans and Guidance

### 4.2.1 U.S. Forest Service

The USFS administers much of the federal land along the western end of the project corridor as part of the Uinta National Forest. Federal ownership begins in Daniels Canyon and extends to the east side of Strawberry Reservoir.

The USFS updated its land and resource management plan for the Uinta National Forest in 2003 (USFS 2003). The project corridor passes through the Strawberry Reservoir Management Area of the forest. The reservoir is the main feature of the management area, and U.S. 40 provides the primary access. The area has heavy recreation use due to its notable sport fishery and proximity to population centers in the Salt Lake and Utah Lake valleys. The land and resource management plan recognizes the importance of U.S. 40 in the Strawberry Reservoir Management Area but does not prescribe any specific goals or policies for the highway’s relationship to future resource management in the area.

#### 4.2.2 Bureau of Land Management

Most of the BLM-administered land along the project corridor is between the eastern boundary of the Uintah-Ouray Indian Reservation and Vernal. There are also small areas of BLM-administered land on the western end of the corridor near Heber City and on the eastern end near Jensen (SITLA 2007a, 2007b, and 2007c).

The Vernal Field Office completed a draft Environmental Impact Statement (EIS) on its proposed draft Vernal District Resource Management Plan (RMP) in 2004. The BLM is currently preparing a supplement to the draft EIS (Howard 2007). The proposed Vernal RMP identifies transportation and utility corridors throughout the Vernal Field Office's management area (BLM 2005). These corridors were previously identified through the BLM's western regional corridor study, so they currently exist and are not dependent upon finalization of the RMP. The BLM has identified these corridors along U.S. 40 between the eastern boundary of the Uintah-Ouray Indian reservation and the State Trust Lands west of Vernal and between the eastern limits of the city of Naples to the Utah-Colorado state line. According to the BLM, the designation of these transportation corridors is to show where the agency encourages the placement of utilities, and the corridors largely exist in areas where there are existing facilities. Any improvements to U.S. 40 would not affect the way the BLM currently manages its lands along these corridors. If construction of improvements to U.S. 40 required acquisition of right-of-way from BLM, then that agency would consider how such an action may affect overall ownership and management of its landholdings in the area (Howard 2007).

### 4.3 Indian Reservation Road Inventory

Indian reservation roads (IRRs) are public roads located within or that provide access to an Indian reservation or Indian trust land; restricted Indian land that is not subject to fee title alienation without the approval of the Federal government; and Indian or Alaska Native Villages, groups, or communities in which Indians and Alaska Natives reside and whom the Secretary of the Interior has determined are eligible for services generally available to Indians under Federal laws specifically applicable to Indians. The Bureau of Indian Affairs (BIA) maintains an IRR Program, which includes a comprehensive road inventory, in support of its road funding program. The IRR inventory includes information on road classifications, route numbers, bridge numbers, current and future traffic volumes, maintenance responsibility, and ownership.



The Uintah-Ouray Indian Reservation is in the BIA's Western Region. The IRR data for the reservation and associated trust lands lists 124 road segments in Uintah and Duchesne counties (51 in Duchesne County and 73 in Uintah County; two of the Uintah County segments are listed as "proposed") representing 64 official routes. The routes can cross county lines and in some cases extend into neighboring Grand County.

Though Uintah-Ouray Reservation IRR includes some information about functional classifications, road ownership, roadbed condition, surface type, shoulder type, and pavement condition, it does not provide specific information on the location of the 64 routes. Table 4.3-1 summarizes the condition of reservation road segments in Duchesne and Uintah Counties for which nearly complete data are available.

Table 4.3–1. Summary of IRR Segments in Duchesne and Uintah County Portions of the Uintah–Ouray Indian Reservation

	Number of Segments	
	Duchesne County	Uintah County
<i>Segments of Existing Road, Including Bridges</i>	51	71
<i>Segment Surface Type<sup>1</sup></i>		
Native	17 (35%)	22 (33%)
Gravel	12 (25%)	8 (12%)
Bituminous Material < 2" Thick	5 (11%)	3 (4%)
Bituminous Material > 2" Thick	14 (29%)	34 (51%)
<i>Segment Ownership</i>		
BIA	33	66
Tribe	1	0
State	10	5
County or Township	6	0
Other Federal Agencies	1	0

<sup>1</sup> Segments that are on bridges are not included in the surface type inventory.

Source: BIA 2006

## 4.4 Wasatch County Plans and Guidance

Wasatch County completed its 20-year Master Transportation Plan in 1998. The intent of this plan is to identify a system that will accommodate the county's anticipated growth through 2020. The Master Transportation Plan is incorporated into the county's general plan (which was completed in 2001) by reference.

The Master Transportation Plan focuses on improvements that will encourage connectivity between neighboring communities and counties while limiting the impacts of major corridors on overall quality of life. One of the main purposes of the plan was to update street classifications and to recommend improvements. Recommended improvements are focused on the Heber City-Midway area, which is out of the corridor study area; the plan does not directly address U.S. 40. The plan does recommend improvement to a section of Main Canyon Road (between Roundy Lane and the USFS boundary), which parallels U.S. 40 and ultimately intersects the highway on USFS land near Daniels Summit. This road serves rural residential development on private land and provides access to recreational opportunities on the USFS land.

The Wasatch County General Plan includes a transportation chapter. This plan shows U.S. 40 as an arterial roadway. The General Plan states that roadways identified as arterials should have right-of-ways that include adequate space for the roadway, trails, and green space. The General Plan discourages driveway access to arterial roadways but does not include specific access standards.

## 4.5 Duchesne County Plans and Guidance

### 4.5.1 Duchesne County General Plan

The Duchesne County General Plan (Duchesne County 1997, as amended in 1998 and 2005) contains a section that addresses public access and RS 2477 roads (roads built prior to October 21, 1976, on rights of way across non-reserved federal lands). As noted above, this section also incorporates the county's transportation system map by reference. The current transportation system map contains B roads only. B Roads are all public highways, roads, or streets that are traveled ways under the jurisdiction of, and maintained to be free from such obstructions as excessive high centers, overgrowth of vegetation, and washouts by a county or incorporated municipality over which a conventional two-wheel



drive vehicle may travel. The general plan does not specify physical standards (such as geometric or access standards) for B roads.

#### 4.5.2 City Plans

##### Duchesne

The city of Duchesne and UDOT completed a draft transportation plan in 2005 (UDOT 2005c). The Duchesne Community Transportation Plan states that U.S. 40 provides a vital function to Duchesne City proper and allows access to adjacent municipalities. No specific width for U.S. 40 is described in the plan.

The plan provides a summary of the current and future project needs and provides cost estimates. Specific recommendations under consideration listed in the STIP and State of Utah's Long Range Plan include:

- Corridor preservation
- Bridge rehabilitation over Starvation Reservoir (Bridge C-560)
- Safety/bridge project on Main Street (U.S. 40) in Duchesne
- Safety/bridge project on SR 191 from Jones Hollow Road to U.S. 40

The plan identifies the following projects as having the highest priority to the Duchesne City Transportation Advisory Committee:

- Signal warrant study for intersections along U.S. 40
- Speed study at each entrance to the city, including those on U.S. 40
- Construct turn pocket on U.S. 40 at east end of town for business adjacent to Strawberry River

Duchesne experiences a significant increase in traffic during the summer months. In addition, hourly traffic on U.S. 40 generally peaks during the afternoon commute hours (between 3:00 PM and 6:00 PM). Duchesne recognizes the need to provide direction for continual maintenance and improvements to its transportation system.

##### Roosevelt

UDOT and the city of Roosevelt completed a draft Transportation Master Plan 2005 (UDOT 2005d). This plan is intended to provide direction for maintenance and improvements to the transportation system that are directly related to the

city's recent increase in population. The plan does not describe a specific width for U.S. 40.

The Transportation Master Plan provides a summary of needs and presents a list of cost estimates. Specific recommendations for projects, which are also listed in the STIP and State of Utah's Long Range Plan, include:

- Widen to three lanes on U.S. 40 from East Roosevelt city limit to East Ballard town limit
- Widen to three lanes on U.S. 40 from West Roosevelt to Ioka Junction
- Safety Project on U.S. 40 from Reference Post 123 to SR 88

Roosevelt experiences a significant increase in traffic during the summer months. In addition, hourly traffic on U.S. 40 generally peaks during afternoon commute hours (between 3:00 PM and 6:00 PM). Accident data provided by UDOT for 2003 show a higher than expected accident rate at MP 114.94 and MP 115.55.

Roosevelt recognizes the importance of building and maintaining safe roadways for auto traffic as well as pedestrians and bicyclists.

## 4.6 Uintah County Plans and Guidance

### 4.6.1 Transportation System Map

As noted earlier, the 2005 Uintah County Transportation System Map classifies U.S. 40 as a state road (Uintah County 2005b). Many different types of roads intersect U.S. 40 along its length in Uintah County, including paved, gravel, native material, unmaintained (i.e., roads that are not maintained by the county but may be maintained by another entity), and city roads. Most intersecting roads in the Fort Duchesne area are paved and once the highway crosses into the Uintah and Ouray Indian Reservation, there are many intersecting roads that are not maintained by the county. Major roads that are maintained along the stretch between the reservation boundary and Vernal include SR 88 (state highway), Road 2230 (native material), Twelvemile Wash Road (paved turning to gravel), McCoy Flats Road (paved), and Dog Valley Road (native material). SR 88 carries a substantial amount of traffic related to oil and gas development area in the southern part of the Uintah Basin. Uintah County would like to extend SR 88 south to connect to Interstate 70 to provide an alternate route for some of this traffic (Steinvorth 2007).

A number of paved roads intersect U.S. 40 east of Vernal and Naples. There are only a few unmaintained roads intersecting the highway between the



Vernal/Naples area and the eastern project limit. SR 149, identified as a state highway, intersects U.S. 40 at the eastern project terminus.

#### 4.6.2 Uintah County General Plan

The Uintah County General Plan includes a transportation chapter, which focuses on overarching county-level policies (Uintah County 2005a). As noted above, the plan does not specifically address U.S. 40. The plan does, however, include some policies that address general roadway development or coordination with UDOT. These policies include direction on developing and maintaining county road standards and coordinating with UDOT during development of a master transportation plan and road maintenance plan.

#### 4.6.3 City Plans

##### Ballard

UDOT completed a draft transportation plan for Ballard in 2005 (UDOT 2005e). This plan recognizes the importance of building and maintaining safe roadways, not only for auto traffic but also for pedestrians and bicyclists. No specific width for U.S. 40 is described in the plan.

Ballard is actively promoting the improvement of bicycle facilities to accommodate recreational cyclists and bicycle tour groups traveling along U.S. 40. As Ballard grows, pedestrian traffic will be accommodated through improvement to sidewalk system along the highway. Ballard experiences a high rate of longer combination vehicle (large truck) traffic coming from oil fields around Ballard along U.S. 40 northwest to Salt Lake City. These trucks have difficulty negotiating tight turning radii when entering or leaving businesses, oil well access roads, and turning on to and off of U.S. 40.

Like other small cities along the corridor, Ballard experiences a significant increase in traffic during the summer months. In addition, hourly traffic flows are consistent with afternoon commuter peak and increase between 3:00 to 6:00 PM. Accident data provided by UDOT for 2003 show a higher than expected accident rate between MP 121.78 and MP 123 along U.S. 40.

Transportation improvement projects listed in the plan and that are also identified in the STIP and the State's Long Range Plan include widening U.S. 40 to three lanes from east Roosevelt city limit to east Ballard town limit and a safety project on U.S.40 from Reference Post 123 to SR 88.

## Vernal

The city of Vernal, in coordination with UDOT, completed a transportation master plan in 2006 (UDOT 2006d).

Within the incorporated area of Vernal, U.S. 40 is classified as a major arterial. The plan describes U.S. 40 as a direct link to Colorado, Salt Lake City, and the nearby recreation areas of Flaming Gorge and Dinosaur National Monument.

The transportation plan identifies some of the major transportation issues as follows:

- Motorist safety
- Bicycle and pedestrian safety
- Signals
- City gateway aesthetics
- Property access
- Truck traffic
- Speed limits

The Technical Advisory Committee for the transportation plan identified the following as priority improvements:

- Intersection improvement at U.S. 40 and 1000 South (west side)
- Intersection improvement at U.S. 40 and 100 South
- Intersection improvement at U.S. 40 and 500 East
- Intersection improvement at U.S. 40 and 500 East (east side)
- Roadway improvement on 1000 South from U.S. 40 to 500 East

Traffic flow on U.S. 40 is consistent with summer recreation use, and peaks in the month of July. Daily traffic flows peak between 4:00 PM and 7:00 PM and reflect commuter travel as well as student traffic from campuses in Roosevelt and Vernal. Accident data from UDOT for 2002 demonstrate a higher than expected accident rate between MP 139.69 and MP 141.47 in the incorporated area of Vernal.

Uintah Basin Transportation Special Service District, an independent quasi-governmental agency, also does some transportation planning for Vernal. The Special Service District is currently working with the city on a bypass roadway planning effort. As of this time, no formal plans have been proposed for a bypass.



## Naples

UDOT and the city of Naples jointly completed a transportation plan in 2006 (UDOT 2006e). The plan recognizes the need to improve circulation in the area in order to accommodate anticipated growth and development. The plan identifies major transportation needs, many of which focus on the U.S. 40 corridor, which is the lifeline of Naples.

The Naples Transportation Plan identifies U.S. 40 as a 110-foot-wide arterial. Major collector streets (which have a right-of-way width of 80 feet) intersecting U.S. 40 in the city include 500 South, 1000 South, 1500 South, 2000 South, 2500 South, and 3000 South. Typical cross sections are included in the plan.

Finally, the plan provides a good summary of needs and presents a project list and cost estimates. In summary, the plan states that there is a need to complete a study of East U.S. 40 that addresses access management, signal warrants, and realignment and relocation of SR 45. Specific recommendations for projects not currently listed in the STIP include:

- Widen U.S. 40 all the way from Roosevelt to Vernal (the STIP includes only the portion between east Roosevelt and east Ballard)
- Widen SR 45 and realign its intersection with U.S. 40
- Complete intersection improvements at U.S. 40 and 1500 South
- Complete intersection improvements at U.S. 40 and 500 South
- Complete signal warrant studies for the intersections of U.S. 40 and 500 South and U.S. 40 and 1500 South

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## 5.0 Issues Summary

### 5.1 Issues Identification Process

#### 5.1.1 What Has Happened to Date?

The issues identification process for the U.S. 40 Corridor Study occurred during March, April, and May 2007. The process included stakeholder interviews, public workshops, stakeholder workshops, and individual comments received through the U.S. 40 Corridor Study web site or directly by UDOT.

Stakeholder interviews included one-on-one and small group sessions with a total of about 60 stakeholders across the corridor. Stakeholders interviewed included:

- County commissioners from Wasatch, Duchesne, and Uintah counties
- Elected officials and staff representing the cities of Naples, Vernal, Roosevelt, and Duchesne
- County road department personnel
- School district representatives
- Law enforcement and safety personnel from the Utah Highway Patrol, city police departments, and county sheriff's departments
- Uintah County Special Transportation District representatives
- UDOT maintenance supervisors for U.S. 40
- USFS personnel from the Uinta National Forest
- Ute Indian Tribal representatives

The public was invited via general postcard mailings, media announcements, and targeted mailings to attend one of three public workshops to learn about the project and to provide input regarding corridor issues. The public meetings were held in Vernal, Roosevelt, and Heber City on April 30, May 1, and May 2, 2007, respectively. These workshops included a formal presentation and information available in an open house format to introduce the corridor study process, present basic existing condition information, present highlights of the issues heard to date, and to gather input regarding particular corridor issues.

Stakeholder workshops gave interested stakeholders a chance to interact and to openly discuss the project corridor, issues, and potential solutions.

Representatives from local governments; local, state, and federal agencies; key businesses; and affected organizations across the corridor were invited to attend one of three stakeholder workshops in Vernal, Roosevelt, and Heber City on April 30, May 1, and May 2, 2007, respectively. The workshops included presentation of information about basic existing corridor conditions and a summary of the issues that had been identified to date. Stakeholders were invited to add new issues and to provide input regarding priorities for the general types of corridor issues.

### 5.1.2 What Happens Next?

UDOT will use information gathered during the stakeholder interviews and workshops, during the public workshops, and through ongoing communication with the public to carry the project into the next stage. Using this information, UDOT will develop a vision statement for the corridor, identify and prioritize the most urgent issues in need of consideration, and identify feasible potential projects that will address these issues while maintaining the corridor vision. Once UDOT develops a preliminary project list and statements of goals and objectives, it will sponsor another round of stakeholder and public workshops. The intent of these workshops will be to receive comments on the vision, goals, and objectives and on the preliminary project list. The final corridor report will consider comments received during this second round of workshops.

## 5.2 Issues Highlights

The following summarizes the highlights of information about issues gathered during the stakeholder and public activities described above. UDOT recognizes that these issues are not yet verified for accuracy and have yet to be evaluated to determine level of significance to corridor operations. Additional comments on issues are expected and will receive consideration as part of the final corridor report.

### 5.2.1 Safety

- Increasing traffic, especially trucks
- Car and large truck conflicts
- High vehicle speeds
- Merging, intersection, and access conflicts



- Insufficient capacity, which causes conflicts
- School bus stops on highway
- Bicycle and pedestrian issues; dangerous crossings in cities
- Wildlife strikes throughout corridor
- Livestock on roadway through Daniels Canyon

### 5.2.2 Congestion

- Delays from Duchesne to Jensen caused by lack of capacity
- Slow truck access and merging, which causes congestion
- Morning and afternoon peak hour (commute hour) congestion from Duchesne to Jensen
- Congestion between and through cities, which results in noise and pedestrian conflicts
- High volume and increasing truck traffic from oil and gas industry
- Anticipated community and corridor-wide growth and development
- Lack of transit (bus) services on the corridor
- Increasing conflicts with driveways in cities

### 5.2.3 Growth and Development Along the Corridor

- New and planned residential development, especially in and around the cities and near Strawberry Reservoir
- Non-residential development, such as:
  - Industrial (Naples)
  - Daniels Summit Lodge expansion
  - Utah State University in Vernal
  - Commercial development in cities

### 5.2.4 Intersection Conflicts

- Truck access point conflicts
  - SR 88, SR 87, SR 191, SR 45

- Twelvemile Road (southwest of Vernal)
- Pleasant Valley Road
- Bridgeland Road (also known as East River Road, between Duchesne and Myton)
- Bonanza Road (east of Jensen, outside of project area)
- City intersection conflicts throughout Roosevelt, Duchesne, Vernal , and Jensen
- Turning movement conflicts, including left turn conflicts with lack of protection from through traffic
- Merging conflicts (lack of protection from through traffic)

### 5.2.5 Roadway Design & Operation

- Passing lane conflict areas
- Insufficient lane capacity
- Narrow shoulders
- Lane restrictions
- Narrow bridges
- Insufficient (short) passing lanes
- Insufficient sight distance on hills
- Need to review existing striping; roadway striping is difficult to see at night
- Insufficient intersection geometrics for truck turning movements
- Roadway damage from large trucks

### 5.2.6 Environmental

- Wildlife crossings and wildlife strikes throughout corridor
- Water resource concerns: uncontrolled stormwater runoff; potential effects to water district facilities and water delivery throughout the corridor
- Drainage: insufficient drainage systems; highway drainage incompatible with city systems



- Hazardous Materials: hazardous materials in and leaking from trucks; incorrect placard use to identify hazardous materials
- Wetlands: from Bridgeland to Myton
- Air quality: road dust and dirt from trucks through cities
- Noise: truck noise through cities

#### 5.2.7 Other Issues

- Potential impacts to tribal lands from Bridgeland through Myton
- Lack of beautification through cities
- Overuse of USFS toilets at recreation sites

### 5.3 General Issues Priorities

At the stakeholder workshops described above, participants were invited to name and prioritize what they believed were the most important issues that UDOT should consider as it plans for the future of U.S. 40. The top three issues identified at each stakeholder meeting location are as follows:

#### ***Vernal***

1. Congestion
2. Intersections
3. Roadway design

#### ***Roosevelt***

1. Safety
2. Congestion
3. Roadway design

#### ***Heber City***

1. Safety
2. Reduced congestion
3. Improved roadway design

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## 7.0 Appendices

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## Appendix A. Recent Surface Treatments to the U.S. 40 Project Corridor

Location	BMP	EMP	Last Major Construction		Last Treatment		Planned and Future Treatments	
			Type	Year	Type	Year	Type	Year
Jct. SR-189 to Clegg Cyn.	18.08	27.71	Asphalt New Construction	2002	new pavement structure	2002	surface seal	2008
							surface rejuvenation	2012
							structural overlay	2016
							surface seal	2017
Clegg Cyn. to Daniels Summit	27.71	34.54	Asphalt New Construction	2001	surface seal	2002	structural overlay	2007
							surface seal	2008
							surface rejuvenation	2012
							surface seal	2016
Daniels Summit to Strawberry Maintenance Shed	34.54	41.39	Asphalt New Construction	1998	surface seal	2004	structural overlay	2009
							surface seal	2010
							surface rejuvenation	2014
							surface seal	2018
Strawberry Maintenance Shed to Soldier Creek Dam	41.39	50.78	Asphalt New Construction	1998	surface seal	2004	structural overlay	2010
							surface seal	2011
							surface rejuvenation	2015
							surface seal	2019
Soldier Creek Dam to Wasatch/Duchesne County Line	50.78	58.69	Asphalt New Construction	1998	surface rejuvenation	2005	surface seal	2008
							structural overlay	2012
							surface seal	2013
							surface rejuvenation	2017
Wasatch/Duchesne County Line to Jct. SR-208	58.89	68.25	Asphalt New Construction	1978	structural overlay	2002	surface seal	2008
							surface rejuvenation	2012
							surface seal	2016
							structural overlay	2020
Jct. SR-208 to Duchesne Western City Limit	68.25	85.85	Asphalt New Construction	1996	surface seal	2002	surface seal	2008
							surface rejuvenation	2012



Location	BMP	EMP	Last Major Construction		Last Treatment		Planned and Future Treatments	
			Type	Year	Type	Year	Type	Year
							surface seal	2016
							structural overlay	2020
Duchesne Western City Limit to Eastern City Limit	85.85	86.8	Asphalt New Construction	1994	surface rejuvenation	2003	surface seal	2008
							surface rejuvenation	2012
							surface seal	2016
							structural overlay	2020
Eastern City Limit to Antelope Creek Bridge	86.8	97.21	Asphalt New Construction	1994	structural overlay	2003	surface seal	2009
							surface rejuvenation	2013
							surface seal	2017
							structural overlay	2021
Antelope Creek Bridge to MP 97.693	97.21	97.69	Asphalt New Construction	1998	structural overlay	2003	surface seal	2009
							surface rejuvenation	2013
							surface seal	2017
							structural overlay	2021
MP 97.693 to Myton	97.69	105.37	Asphalt New Construction	1998	structural overlay	2003	surface seal	2009
							surface rejuvenation	2013
							structural overlay	2017
							surface seal	2018
Myton to Jct. SR-87/Ioka Lane	105.37	109.49	Asphalt New Construction	1998	structural overlay	2003	surface seal	2009
							surface rejuvenation	2013
							structural overlay	2017
							surface seal	2018
Jct. SR-87/Ioka Lane to Duchesne/Uintah County Line	109.49	115.21	Asphalt New Construction	1993	surface rejuvenation	2004	structural overlay	2008
							surface seal	2009
							surface rejuvenation	2013
							surface seal	2017
Duchesne/Uintah County Line	115.21	121.69	Asphalt New Construction	1994	structural overlay	2005	surface seal	2011



Location	BMP	EMP	Last Major Construction		Last Treatment		Planned and Future Treatments	
			Type	Year	Type	Year	Type	Year
to old RP 123							surface rejuvenation	2015
							structural overlay	2019
							surface seal	2020
Old RP 123 to Jct. SR-88	121.69	130.45	Asphalt New Construction	1994	structural overlay	2005	surface seal	2011
							surface rejuvenation	2015
							surface seal	2019
							structural overlay	2023
Jct. SR-88 to Vernal Southern City Limit	130.45	141.46	Asphalt New Construction	1997	structural overlay	2005	surface seal	2011
							surface rejuvenation	2015
							structural overlay	2019
							surface seal	2020
Vernal Southern City Limit to Naples North City Limit	141.46	145.87	Asphalt New Construction	1992	surface seal	2003	surface seal	2009
							surface rejuvenation	2013
							structural overlay	2017
							surface seal	2018
Naples North City Limit to 9000 East	145.87	156.6	Asphalt New Construction	1997	structural overlay	2005	surface seal	2011
							surface rejuvenation	2015
							surface seal	2019
							structural overlay	2023
9000 East to Old RP 160	156.6	158.62	Asphalt New Construction	1997	surface seal	2005	surface seal	2011
							structural overlay	2015
							surface seal	2016
							surface rejuvenation	2020

Source: UDOT 2007b

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## Appendix B. Current Bridge Ratings for the U.S. 40 Corridor Study Area

Structure Number	Bridge	Beginning Milepost	Sufficiency Rating	Bridge Condition
E-2017	Strawberry River Bridge	36.9	80	Good
F-602	Currant Creek Bridge	58.1	80	Good
D-595	Red Creek Bridge	65	43.3	Poor
D-592	Bridge over Sand Wash	66.5	62	Fair
C-560	Starvation Reservoir Bridge	81.1	82.7	Good
F-265	Strawberry River Bridge	85.7	84.8	Good
F-62	Strawberry River Bridge	87.2	81.3	Good
E-1293	Grey Mountain Canal Bridge	95.6	80.3	Good
F-690	Antelope Creek Bridge	97.2	96.7	Very Good
D-560	Antelope Creek Bridge	97.2	38.4	Poor
E-966	Bridgeland Myton Wash Bridge	100.2	87.9	Good
C-794	Duchesne River Bridge	105.3	95.9	Very Good
E-1096	Dry Gulch Canal	106.3	79.1	Fair
V-1695	Dry Gulch Canal	110.5	87.6	Good
D-593	Cottonwood Creek	114.6	75.2	Fair
D-658	Pipe over Highway 40	118.4	60	Fair
C-321	Uintah River Bridge	121.6	91.2	Good
E-1158	Bridge over Sand Wash	129.5	95.1	Very Good
E-1499	Halfway Hollow Wash Bridge	130.9	91.7	Good
E-1500	Twelve Mile Wash Bridge	133.7	90.7	Good
D-828	Steinaker Canal Bridge	142.6	84.4	Good
F-593	Ashley Creek Bridge	153.7	96.6	Very Good

Source: UDOT 2007c